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Water for All People

Equal Rights and Opportunities

The United Nations World Water Development Report 2026

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Food and Agriculture Organization of the United Nations
United Nations ECA, ECLAC, ESCAP, ESCWA
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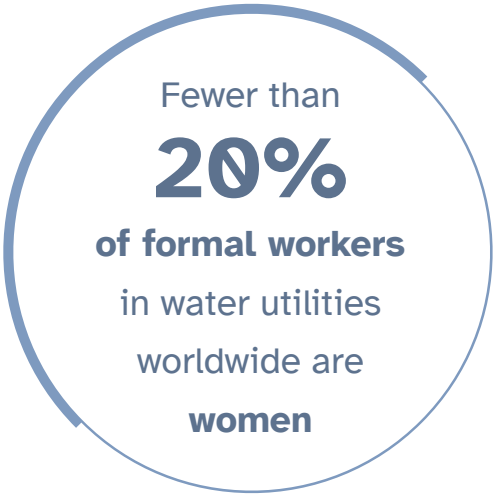
SHORT SUMMARY

When it comes to water, gender inequalities affect everyone

Gender-based inequalities related to the access, use, management and governance of water resources – including water supply and sanitation services – have hindered progress towards fulfilling the human right to water and most Goals of the 2030 Agenda for Sustainable Development.

Where access to drinking water, sanitation and hygiene services is lacking, women and girls often disproportionally bear the responsibility for providing water to households.

Titled ***Water for All People: Equal Rights and Opportunities***, the 2026 edition of the *United Nations World Water Development Report* offers a comprehensive, evidence-based examination of the linkages between, and progress towards, water and gender equality. It describes how normative and policy frameworks translate into problem analysis, programme design principles and strategic action implementation in the water domain, pinpointing solutions.



When it comes to water, gender equality leads to enhanced opportunities for all.

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"Since wars begin in the minds of men and women it is in the minds of men and women that the defences of peace must be constructed"

Water for All People

Equal Rights and Opportunities

The United Nations World Water Development Report 2026

Foreword

Khaled El-Enany, Director-General of UNESCO


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Access to water is not merely a question of availability or infrastructure. It is, at its core, a question of rights – and of power. Who has access to water, who pays the price for its scarcity, and who sits at the decision-making table reveals enduring inequalities that run deep through our societies.

The 2026 United Nations World Water Development Report, *Water for All People: Equal Rights and Opportunities*, delivers a powerful message: water security and gender equality are inseparable. Too often, these issues are treated in isolation. This report brings them together, with the clarity of data and evidence.

Across the world, it is women and girls who most often carry the daily weight of water insecurity. In more than 80% of rural households without direct access to water, they are responsible for collecting it, walking long distances, and managing its use. This work consumes 250 million hours every day globally. It limits access to education, undermines health, and constrains women's economic and civic participation. At the same time, women remain largely excluded from decision-making processes in water institutions holding less than 30% of management and technical positions in the water sector globally, and fewer than 20% of senior leadership roles in many public water institutions. This imbalance weakens water governance itself: water systems are more effective, inclusive, and sustainable when women participate fully and meaningfully.

The findings of this report leave no room for doubt. Technical solutions alone cannot solve what are, at their root, social and political challenges. We need inclusive governance, reliable and disaggregated data, and policies grounded in reality and in human rights.

This is precisely where UNESCO's action is focused. We work with governments to design water policies that truly reflect women's lives – and ensure their voices are heard when decisions are made. We equip institutions with the tools they need to act: practical guidance, improved data, and targeted training. Since 2020, through the *World Water Assessment Programme*, we have trained over 1,000 professionals in 35 countries – from West Africa to the Pacific Islands – helping translate commitments into solutions on the ground.

We are also building coalitions. In 2021, we launched a *Call for Action* to accelerate gender equality in the water domain. Today, more than 200 organizations and institutions have joined this growing coalition – united by the conviction that fairer water governance is essential to sustainable development.

This report was made possible by the collective leadership of UN-Water and the long-standing support of the Government of Italy to the World Water Assessment Programme. I thank them both.

The path ahead is clear. Gender equality must be a cornerstone of water governance. We must ensure that the voices of women are finally heard where decisions are made. Because the right to water must not remain a principle. It must become a reality – for all.

Khaled El-Enany

Foreword

Alvaro Lario, Chair of UN-Water and President of the International Fund for Agricultural Development

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Gender equality and water security are inextricably linked and firmly anchored in the United Nations normative and policy framework. The recognition of the human rights to water and sanitation by the United Nations General Assembly (A/RES/64/292), the 2030 Agenda for Sustainable Development, and the Beijing Declaration and Platform for Action together establish a clear mandate to address gender inequalities in access to water, participation in decision-making and sharing of water-related benefits.

Successive United Nations Water Conferences, most recently the 2023 Conference, have reaffirmed the central role of women's and girls' leadership and meaningful participation across water-related sectors. These commitments reflect a growing recognition that gender equality is not only a matter of rights and justice, but also a practical condition for effective and sustainable water resources management.

UN-Water plays a vital role in advancing system-wide coherence on gender equality and water. It convenes the United Nations system and key water-related organizations, while fostering joint policy positions and strengthening collective advocacy. It coordinates global monitoring of Sustainable Development Goal 6 (SDG 6) and strengthens mechanisms for accountability in tracking progress. It also helps Member States to identify persistent gaps and emerging challenges. The integration of gender-responsive indicators and sex-disaggregated data within SDG 6 monitoring remains essential to ensure that progress is both measurable and equitable.

As the international community enters the final stretch of the 2030 Agenda, it is increasingly clear that achieving SDG 6 will require not only accelerated joint action but also reflection on pathways that extend beyond 2030. Demographic change, climate impacts, growing water risks and persistent inequalities demand longer-term, people-centred approaches that place gender equality at the heart of future water governance and institutional arrangements.

Recent system-wide initiatives, including the Pact for the Future, reinforce this perspective by emphasizing gender equality and equitable access to essential resources, including water, as foundations for inclusive and peaceful societies. These global commitments invite the water community to look beyond short-term targets to shape a forward-looking agenda grounded in evidence and shared responsibility.

The United Nations World Water Development Report 2026, Water for All People: Equal Rights and Opportunities provides a timely and authoritative contribution to this effort, demonstrating how advancing gender equality in and through water can strengthen the effectiveness and sustainability of water resources.

UN-Water remains committed to advancing gender-responsive water governance, including by promoting women's participation and leadership, improving accountability through robust monitoring and supporting a transformative vision for water that leaves no one behind, now and in the decades to come.

I would like to acknowledge the contributions of the United Nations entities and international partner organizations of the UN-Water family that helped to complete this report.

Alvaro Lario

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Preface

Miguel De Franca Doria, UNESCO WWAP Coordinator
Richard Connor, Editor-in-Chief
Laura Verónica Imburgia, Programme Specialist

While the potential benefits and opportunities generated by promoting gender equality with respect to water have been increasingly recognized for decades, overall progress has been mixed. Today, gender inequalities in the water domain persist at all levels. Women remain disproportionally affected by limited access to safe drinking water and sanitation services, and the critical role of women in water management is still far from being reflected at the decision-making and governance level. Nevertheless, policy instruments, good practices and tools to address these challenges do exist and can be readily implemented.

The 2026 edition of *The United Nations World Water Development Report* demonstrates how promoting equal rights and opportunities related to water benefit all people. This edition of the United Nations system's flagship annual thematic report on water provides in-depth analysis of the subject, focusing on the intricate relationships between water and gender equality. Our analysis reveals how gender-responsive initiatives across the main water use sectors (agricultural, industrial, and supply and sanitation), in the context of current global challenges and crises such as poverty, climate change and ecosystem degradation, can lead to significant positive outcomes for all people. Such initiatives range from the spheres of education and research, through to those of governance, regulatory frameworks and financing. Access to lifelong water-related education and capacity development, in particular, often constitutes the cornerstone of improved water governance, and its relevance should be emphasized as an instrument for gender equality. While each response is likely to make a difference in itself, when taken collectively, they can be expected to generate a multiplier effect that will help spread progress across a variety of social, economic and environmental objectives.

This report presents the latest state-of-the-art knowledge regarding different aspects of water and gender equality. Like in all previous editions, we have endeavoured to produce a balanced, evidence-based and objective account of the current state of knowledge, relying on the latest and most reliable data available.

Although primarily targeted at policymakers, decision-makers, water resources managers, academics and the broader development community, we hope this report will also be well received by other specialists and a wider public, including those who are engaged in the alleviation of poverty and humanitarian crises, the pursuit of universal access to water supply and sanitation, and the 2030 Agenda for Sustainable Development.

This edition is the result of a concerted effort among the chapter lead agencies listed in the acknowledgements. The report also benefited to a great extent from the inputs and contributions of several other UN-Water Members and Partners, as well as from numerous universities, research institutions, scientific associations and non-governmental organizations, who provided a broad range of relevant materials. On behalf of the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Water Assessment Programme (WWAP), we would like to extend our deepest appreciation to all the chapter authors and contributors for collectively producing this unique and authoritative report.

We are also profoundly grateful to the Italian Government for funding the Programme and the production of this report, and to the Regione Umbria for generously hosting the UNESCO WWAP Secretariat. Their contributions have been instrumental to the production of this latest edition.

Finally, we extend our sincerest gratitude to our colleagues at the UNESCO WWAP Secretariat, whose names are listed in the acknowledgements. This year provided our team with an opportunity to collaborate in an unprecedented fashion, combining the globally recognized expertise of the professionals involved in our decade-long water and gender programme with that of our modestly sized yet highly experienced report production staff. Our report could not have been successfully completed without their professionalism and dedicated teamwork.

Miguel De Franca Doria

Richard Connor

Laura Verónica Imburgia

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Executive summary

Access to safe and affordable drinking water and sanitation services, and to adequate water supplies for various other purposes, is essential for the fulfilment of the most basic needs and fundamental aspirations of all human beings. When access to drinking water, sanitation and hygiene (WASH) services is lacking, women and girls often disproportionally bear the responsibility for providing water to households.

Women are generally under-represented in the governance and management of water supplies, including financing and water-related infrastructure development. This can hinder their access to water resources and the equal sharing of benefits, threatening their health, livelihoods and food security.

Gender equality constitutes an essential path towards fair and just access to, and use of, water

Titled *Water for All People: Equal Rights and Opportunities*, this report provides a comprehensive, evidence-based summary of the linkages between, and progress towards, water and gender equality. It describes how normative and policy frameworks translate into problem analysis, programme design principles and strategic action implementation in the water domain. Understood as the equal enjoyment of rights, responsibilities and opportunities for all people, regardless of their sex and/or gender, gender equality constitutes an essential path towards fair and just access to, and use of, water.

Drinking water, sanitation and hygiene in human settlements

As of 2024, 2.1 billion people still lacked safely managed drinking water while 3.4 billion people still lacked safely managed sanitation services and 1.7 billion lacked basic hygiene services at home.

Women and girls are most likely to be responsible for water collection, thus exposing them to safety risks, especially in remote or insecure areas. Carrying water can cause physical strain and injury, and women and girls may be confronted with gender-based violence. Lack of privacy and safety because of poor sanitation facilities also disproportionately affects women and girls. When water is unsafe or unreliable, the unpaid daily labour of managing, rationing and prioritizing water use, as well as the labour of caregiving, can lead to illness in the household.

The human rights to water and sanitation entitle all people to access to safe and clean drinking water and adequate sanitation, provided equally and without discrimination. Fulfilment of these rights requires that all obstacles in access to safe drinking water and sanitation are removed, particularly for the most marginalized populations. This includes removal of impediments to equal participation of men and women in water governance.

However, gender disparities in women's access, participation and leadership remain high, particularly in low- and middle-income countries. Gender inequalities in WASH services occur as part of a pattern of other inequalities and discriminatory social practices.

Secure land tenure and housing rights are often a prerequisite for accessing municipal water and sanitation services. Poor housing quality, insecure land tenure and housing discrimination can disproportionately affect women. With legal ownership or recognized tenure, residents are in a position to demand better services, including water and sanitation.

Access to safe WASH in schools contributes to positive health, improved school attendance and, ultimately, better educational outcomes. In health care facilities,

sex-separated and well-maintained toilets should be available for staff and patients, and should include facilities for menstrual hygiene management.

The WASH community has often called for 'low-cost' solutions without investigating the household's ability to pay, the opportunity cost of such payments or who pays. It is likely that some of these WASH approaches are low cost in part because the labour associated with their application and maintenance goes unpaid.

Alleviating gendered inequalities in WASH calls for interventions that go beyond technical fixes to those that address structural and social inequalities. Examples demonstrate that when women's participation is designed to encourage leadership and voice, as opposed to merely checking boxes, women are active agents of change for gender equality and WASH equity.

Food and agriculture

Access to and management of water in agriculture can be highly gendered. Due to customary norms and legal frameworks in land and water tenure, women in rural areas may face greater obstacles to accessing and controlling water for irrigation, livestock, aquaculture and domestic use compared to men. Even when women are involved in water management in agriculture, their role is often not recognized, limiting their power-sharing and economic potential.

Women's water tenure security can improve when interventions adopt gender-transformative approaches to challenge patriarchal values. However, formal ownership of land and water resources does not guarantee control, especially when use rights (access and withdrawal) are distinct from control rights (management, exclusion and alienation).

Gender inequalities in access to land and management of water resources in agriculture can negatively affect girls' access to education, women's livelihoods and empowerment, and household health and nutrition. These inequalities exacerbate women's exposure to food insecurity.

Outmigration is reshaping gender roles in agriculture. In many countries, there has been a rise in female-headed households because of male migration. The impact of migration on women's decision-making in agricultural production, control over income, group membership and workload depends on factors such as household land ownership, women's position within the household and whether the household receives remittances.

Gender inequalities in WASH services occur as part of a pattern of other inequalities and discriminatory social practices

Improving women's access to irrigation may provide benefits that go beyond enhancing agricultural production. Irrigation technologies can reduce labour and time burdens. When designed as multiple-use water services, they can support domestic and other productive needs as well. The promotion of collective action by strengthening women's groups and grass-roots organizations can amplify these gains.

Industry, business and energy

The water sector is struggling to attract, train and retain human resources in many parts of the world, including women's participation in management and leadership positions. While some water utilities have close to 40% of women employees, there are some entities and locations with no female staff. It is possible to progress towards achieving gender equality in WASH sector employment, particularly in positions such as community sanitation and health work.

Access to energy is essential for water use in domestic and agricultural settings, especially where water pumping is required. While women have traditionally operated manual pumps, the shift to fuel- and solar-powered systems offers time-saving benefits.

WASH in workplaces is known to improve workforce productivity and health. However, sanitary facilities are still not always provided separately for men and women; often they are not fit for the specific needs of women, including menstruating, pregnant and lactating women. Several countries and organizations have adopted guidelines for the number of toilets for workers, differentiating requirements for men and women, although such guidelines may be more difficult to implement in smaller enterprises.

WASH in workplaces is known to improve workforce productivity and health

Business and industry can promote gender equality in water use by championing policies and practices rooted in sustainability, equity and inclusivity. Companies can also initiate training, promote women's leadership and invest in community water infrastructure. As part of corporate social responsibility, industry could fund initiatives that support women's access to water, education and livelihoods. This might include scholarships for women studying water management or investing in women-led water-based enterprises.

Gender audits can be effective tools for systematically evaluating the extent to which gender equality is embedded within organizations, programmes and sectors, including in industry, business and energy. These audits examine policies, workplace practices and leadership structures to identify inequities that may limit women's participation or where they may benefit from opportunities and resources.

Climate change and hydrometeorological disasters

Climate change is posing more threats to human well-being, through its impact on water and food security, public health, economic stability and the environment. Intensified occurrence and magnitude of hydrometeorological hazards highlights the urgent need for adaptive, resilient and integrated approaches to disaster risk management (DRM) strategies.

Gender is a key structural determinant of disaster vulnerability. Improvement of development outcomes can depend on integration of gender considerations into disaster resilience efforts.

Hydrometeorological disasters can disproportionately affect women, girls and gender-diverse people due to systemic inequalities in access to resources, decision-making and services. Women may particularly face heightened risks to their livelihoods, rights, safety and health (especially menstrual health and hygiene). Hydrometeorological services, such as early warning systems, that are sensitive to disparities, responsive in intervention and inclusive in representation can help to ensure people of all genders are engaged, protected and empowered.

Although gender mainstreaming and DRM are broadly endorsed and there is now greater awareness of gender-related considerations in DRM, practical implementation remains limited, partly due to insufficient guidance. Mitigation efforts that incorporate gender considerations can help to build resilient infrastructure and inclusive policies that may reduce long-term risks and promote sustainable integrated water resources management.

Equitable and tailored interventions can help to protect vulnerable populations and uphold human rights, minimizing the immediate social and economic damage caused by disasters. Understanding how gender affects exposure, access to resources, needs and responses to hydrometeorological disasters lays the groundwork for designing DRM interventions and also for formulating targeted, equitable and inclusive climate adaptation strategies.

Ecosystems

The main drivers of aquatic ecosystem degradation and biodiversity loss include climate change, land-use change and pollution. Analysing these complex linkages through the lens of gender equality can aid better understanding of their specific and often disproportionate impacts on women and men and highlight the various roles men and women play in water and ecosystem management, while contributing to gender equality.

Across cultures and communities, women have been involved in safeguarding and managing ecosystems for centuries – developing and transmitting local and traditional knowledge from generation to generation. Ensuring women have equal access to ecosystem services and are involved in ecosystem management can help reduce gender inequalities, contributing to more equal and resilient communities.

At the community level, social and political power dynamics can play a significant role in determining resources use and access, and their economic benefits. This is especially true where access to common lands or resources is restricted by gender-based discrimination rooted in sociocultural norms.

The inclusion of traditional, Indigenous and local knowledge in water and ecosystem management is vital for local leadership and community-based water and ecosystem restoration and management approaches.

Adopting gendered approaches can foster more inclusive, resilient and innovative strategies to manage water-related ecosystems, by addressing the specific realities of women and girls. While women may bear a disproportionate burden of ecosystem degradation due to gendered roles, limited access to water and natural resources, and social inequalities, they fulfil active roles as community members and leaders who hold important knowledge that can contribute to resilient, productive and sustainable communities.

Regional perspectives

Sub-Saharan Africa

Socio-economic obstacles, traditional customs and inheritance laws that have traditionally favoured men often exacerbate gender disparities in access to water across Sub-Saharan Africa. This can lead to unequal gender participation and impacts from water-related development and climate challenges. Strengthening governance structures may help to achieve equitable access to water resources and WASH services, recognizing the critical role women play in water management and decision-making processes and incorporating Indigenous knowledge.

Strengthening governance structures may help to achieve equitable access to water resources and WASH services

Capacity-building initiatives can also help to empower women and youth through education and professional development, thereby promoting gender equality in water-related professions. Gender-based messaging, monitoring and evaluation can bring about behavioural changes in participation and water use in communities, to prevent gender-related disparities in water access. By mainstreaming gender considerations into water management and climate-resilience efforts, Sub-Saharan Africa can move towards more equitable and sustainable development outcomes.

Many water projects in the region are underfunded, and there is a need for increased investment to support gender-responsive initiatives. Inclusive and gender-responsive financing can help to address the water challenges of Sub-Saharan Africa. Leveraging mobile money technologies for bill collection, fostering public–private partnerships, and executing targeted marketing and communication strategies

are key elements in building trust and attracting vital investments to enhance water infrastructure and services.

Gender-responsive financing can drive innovation in the water sector by encouraging the development of solutions that address the specific needs of women and marginalized groups. This requires collaboration between governments, international organizations and private sector stakeholders to mobilize resources and ensure financing mechanisms are inclusive and equitable in Sub-Saharan Africa.

Asia and the Pacific

Although gender dynamics vary across contexts, women and girls play a vital role in managing domestic and productive water resources. Yet they face gender-specific water challenges across Asia and the Pacific. These include: limited and unequal access; risks to health, safety, education, and economic and livelihood opportunities; under-representation in water governance; and increasing threats from climate change.

Significant progress has been made in WASH across the region; however, challenges remain in rural areas and informal settlements, with disproportionate impacts on women and girls. Evidence has shown mainstreaming gender and including women in water supply projects and policies can improve effectiveness, sustainability and equitable sharing of benefits.

Women – including from Indigenous and local communities – possess expertise and traditional knowledge as well as unique experiences, ideas and voices that are vital for shaping water resources policies, programmes, financing allocations and international dialogue.

Ensuring gender equality in water access, governance and management is a matter of social justice and also a prerequisite for sustainable development and climate resilience. Addressing the gender- and water-related challenges in Asia and the Pacific requires transformative changes in mindsets, social norms, data, policy and investment. Examples from across the region show how policymakers and practitioners can strengthen water governance by enhancing gender-responsive approaches, inclusive decision-making and targeted interventions recognizing women's and girls' key roles as agents of change.

Latin America and the Caribbean

Water is essential for domestic and caregiving tasks. In Latin America and the Caribbean, these responsibilities fall predominantly on women, and are typically unpaid and unrecognized.

Mainstreaming gender equality into water policy in Latin America and the Caribbean is feasible and transformative; however, it is moving at a slow rate with insufficient scaling up. Women – particularly those in rural and Indigenous communities – play a vital yet often unrecognized role in water access, management and environmental stewardship. When supported through inclusive policies and programmes, women's leadership can contribute to more equitable and sustainable water governance.

Nonetheless, persistent structural obstacles remain. Limited access to safe WASH services, unequal land and resources ownership, and women's under-representation in decision-making roles continue to reinforce gender-based inequalities. The burden of unpaid water-related work particularly restricts women's opportunities for education, employment and community participation.

Promising initiatives exist. They could be replicated by considering the different regional contexts, and scaled and adapted regionally. Recognizing and integrating ancestral and local knowledge, especially of Indigenous communities, is crucial for developing culturally relevant and sustainable water policies.

Achieving gender equality in water governance requires systemic change: investment in sex-disaggregated data, removal of institutional obstacles, investment in rural water infrastructure, and greater inclusion of women in water management and other interrelated sectors such as land and technology. These efforts are essential for social justice and also for building resilient, water-secure communities across the region.

Europe

Although Europe has achieved near-universal coverage in access to water supply and sanitation, gender-based disparities remain embedded in multiple dimensions of the water sector. Women remain under-represented in technical, managerial and policymaking roles in the water sector, despite notable progress in gender equality across European institutions. Structural impediments such as lack of mentorship, gendered job expectations and work–life imbalance can contribute to women's attrition and limited upward mobility.

Such gender inequalities are not simply a result of technical gaps but rather stem from deep-rooted institutional and sociocultural blind spots in how water systems are conceptualized, governed and financed. The role of women in water-related labour – especially in domestic and caregiving contexts – continues to be undervalued and largely invisible in water planning and budgeting.

Valuing unpaid care and domestic labour within water service delivery systems and pricing frameworks could help to recognize the full economic contribution of women to water management

A shift in how water governance integrates gender analysis may contribute to addressing these obstacles. Institutions could consistently collect and apply sex-disaggregated data in the design, implementation and monitoring of water policies. Valuing unpaid care and domestic labour within water service delivery systems and pricing frameworks could help to recognize the full economic contribution of women to water management.

By reflecting the intersectional realities of gender, age, ethnicity and economic status – which together determine levels of vulnerability to water-related hazards – conducting risk assessments could aid inclusivity. The application of gender-responsive budgeting tools at the national and European levels may encourage water investments to promote technical efficiency, social equality and long-term sustainability.

Arab region

The Arab region is one of the most water-scarce regions in the world. Additional crises can exacerbate the water challenge in the region, including climate change, conflict, and socio-economic and political upheaval. Women and girls frequently disproportionately shoulder the burden of these impacts due to stereotypes associated with traditional gender roles.

While there have been some advances in women's inclusion in water resources management, there is a need to build on the momentum. Education and training can help to equip women and girls with the knowledge and skills necessary to make an impact. A common persistent obstacle is the existence of gender stereotypes, which may hinder women's enrolment in science, technology, engineering and mathematics (STEM) education and their participation in water management positions.

Gender mainstreaming policies can also help to support women's insertion in the water sector at the national and subnational levels. Multiple interventions could be used to overcome this, including more equitable hiring practices and programmes that increase women's influence in water management.

Robust monitoring and reporting mechanisms – along with sharing of good practices, success stories and lessons learned – can guide future initiatives on women leading the water management and WASH sectors and participating in decision-making processes while breaking through gender stereotypes that may inhibit women's involvement.

While training and capacity-building can help to empower women, national policies are also needed to translate education into action.

Data, education and capacity development

Gender equality in water access and management, data on progress in gender equality, and the relevant education and capacity development needed for equality are essential for improving the lives of women and men and for achieving sustainable development well beyond the water domain.

The call for sex-disaggregated data in the water world is not new. Disaggregated data are routinely collected in other sectors, but methods of accounting for women's undervalued time, even when they exist, remain underutilized. At best, gender data gaps are a missed opportunity to alleviate gender disparities in the water domain. At worst, they allow the 'free' labour of women to be taken for granted by communities, and also by researchers, donors and policymakers who continue to design and promote water technologies mislabelled as 'low cost', when in reality, once concomitant labour costs are considered, these are actually 'high-cost' water technologies.

Developing skills and in-country capacity to monitor and evaluate water programmes through a gender lens is essential for more equitable and more effective water management. Training women, through more equal access to STEM fields and professional opportunities, can make them stakeholders and leaders in knowledge generation and in water management decisions at all scales. Skills development (and certification) is needed to counter women's current over-representation in low-value and underpaid water work and under-representation in decision-making and higher-paid positions.

Traditionally, states have been the primary duty bearers in this capacity-development role, but significant technical, managerial and financial support may be needed from the private sector and civil society partnerships. Internal and external finances, guided by principles of sustainability and equality in access and management, can help to smooth the path towards a more equitable and efficient water domain.

Governance

International normative and human rights frameworks have contextualized the primordial importance of water governance. Governance of water resources, access, distribution, services and provisioning has profound implications for people's rights, resilience, livelihoods, health and well-being, and for sustainable development as a whole. This is particularly true for women, girls and gender-diverse people, and for their households and communities.

For decades, there have been calls for gender mainstreaming in water management and decision-making, amid evidence that women's participation is pivotal for effective and sustainable water projects and enhancing local water governance. However, there are stark gender gaps in water governance, leadership and financing at national, municipal and local levels, in government, public and private water utilities, and water management and user groups. Women's rights to and control over water resources and access to and benefits from water often remain unrealized.

When women and youth do participate in water governance, it can often be 'tokenistic'. There may be perfunctory or symbolic inclusion in meetings and consultations and reporting of their presence, without consideration of their mobility constraints, unpaid care and domestic work responsibilities, or whether they actively participate or influence decisions or policies.

Undervaluing women's labour, knowledge and expertise and gender stereotypes about women's suitability for certain kinds of work, including travel and fieldwork, underlie occupational segregation and gender pay gaps.

Promoting the real and effective engagement of women and girls in water governance may be achieved by enacting legal reforms and implementing supportive policies, raising awareness and advocating against discrimination and exclusion, and building stakeholder capacity to knowledgeably influence decision-making and policymaking at local, national and global levels.

Financing and investment

Gender-sensitive budgeting needs to be strongly encouraged, and supported by clear accountability mechanisms and full transparency. Experience shows that voluntary or ad hoc approaches consistently fall short, often resulting in tokenistic allocations and weak, unsustained investments. Yet evidence shows the inclusion of women can improve financial returns by strengthening decision-making, improving bottom-up acceptance and increasing project efficiency.

Developing assessments that are beyond typical financial return calculations and instead taking a longer and broader socio-economic valuation may help financial strategies to account for the essential yet often undervalued roles of women and girls in water systems. Such assessments could include elements (e.g. unpaid water-related domestic work, which carries significant economic value) to be recognized in financing strategies. The assessment of long-term cascading effects and values is challenging but crucial.

There are stark gender gaps in water governance, leadership and financing

Meaningful participation in the financing process can strengthen trust, transparency and community ownership, which can improve the sustainability of investments. Specific and tailored modalities and strategies are needed to address structural impediments such as limited land ownership, banking access and credit histories, without perpetuating cycles of indebtedness.

Gender-responsive financing frameworks can be improved by integrating strong accountability and anti-corruption measures. Enhancing transparency in financial flows could protect resources while improving outcomes for gender equality in water financing. Additionally, gender-responsive financing must not deepen the debt burdens of developing countries and create new financial dependencies, thus undermining progress towards gender equality in the water sector.

Coda

Gender equality matters in access to water resources and fulfilment of the human rights to water and sanitation.

While women and girls are still largely responsible for water-related tasks at home, they are disproportionally affected by lack of access to safe drinking water, sanitation and hygiene services in schools, workplaces, health care facilities and households.

Access to water resources is generally linked to land tenure, directly affecting the availability of water for productive uses such as farming, leaving some women and men at social and economic disadvantages.

Lack of sex-disaggregated water data remains a fundamental blind spot, obscuring inequalities in access, labour and decision-making. Addressing this gap is important for effective and accountable water policies and investments.

Women are often under-represented in employment and decision-making related to water, undermining their capacity to contribute to improving water management practices. However, many women from different socio-economic, educational and professional backgrounds have been contributing to water management for decades. This report builds on their work, highlighting examples that can be useful for closing gender gaps in the water domain.

Addressing gender-based inequalities related to water is key to poverty alleviation, fulfilling the human rights to water and sanitation, and accomplishment of most Sustainable Development Goals.

When it comes to water, gender equality leads to enhanced opportunities for all.

Prologue

UNESCO WWAP
Richard Connor

Photo: © UNESCO/Alexander Otte

State of the world's freshwater resources

Water availability

The overall volume of the world's renewable freshwater resources, estimated at roughly 43,000 km^3/year (FAO, n.d.), remains relatively constant from one year to the next. However, the availability can vary considerably over space and time – from place to place, year to year and season to season – according to geographical and climatic factors. This variability and the associated uncertainties have been increasing due to climate change (IPCC, 2022). The seasonal variability in water availability has its greatest impacts at local levels, especially where storage and delivery infrastructure are lacking or insufficient to cope with demand during periods of scarcity (UNESCO/UN-Water, 2020). It has been estimated that 10% of the global population live in countries with critical and high levels of water stress (FAO/UN-Water, 2021), and at least 50% – around 4 billion people – live under highly water-stressed conditions[1] for at least one month of the year (Kuzma et al., 2023).

With large volumes present in many parts of the world, groundwater is an alternative resource to surface water. However, its vast potential has remained underutilized in several regions, in particular across Sub-Saharan Africa, where seasonal variability and recurring episodes of surface water scarcity are common. In other areas, including parts of Asia and North America, unsustainable levels of groundwater abstraction have led to long-term storage depletion (United Nations, 2022), rendering this resource unavailable for present and future generations.

Ambient water quality is an additional determining factor in terms of freshwater availability, as it limits potential uses and/or increases delivery costs due to treatment and delivery related expenses. Comprehensive water quality data are notoriously difficult to obtain, due to a combination of insufficient monitoring and reporting – and associated costs and capacity – and the wide range of potential contaminants and measuring parameters. Point source contamination from industry can occur across all continents, while poor water quality in low-income countries is often related to deficient or inexistent wastewater treatments. However, agricultural run-off is the main source of freshwater contamination worldwide, including in higher-income countries (United Nations, 2023; 2024).

As a result of climate change, floods, droughts and other climate-related hazards have been increasing in frequency and intensity (IPCC, 2022). Global warming is reducing snow accumulation at high elevations and accelerating glacier melt, affecting the timing and volume of river flows downstream (United Nations, 2025).

Water demand and use

Global water use – measured as total water withdrawals by major use sectors – remained relatively stable over the period 2010–2021, at around 4,000 km^3/year, corresponding to roughly 10% of the world's renewable freshwater resources. As of 2022, agriculture accounted for 72% of these withdrawals, followed by the industry (15%) and municipal/domestic (13%) sectors (FAO, n.d.). Groundwater provides roughly half of the water withdrawn for domestic purposes and around 25% of all fresh water used for irrigation (United Nations, 2022).

These global figures fail to capture significant variations across the spectrum of economic development. For example, while agriculture accounted for about 90% and 88% of water use in low- and lower-middle-income countries, respectively, in 2020, it dropped to 66% and 44% in upper-middle- and high-income countries. This is indicative of the greater economic diversification that accompanies income growth – evolving from mainly agrarian-based economies towards a higher proportion of manufacturing and service-related industries, which tend to be less water intensive (United Nations, 2025). This also has direct implications on employment and livelihoods. Jobs in the agriculture sector are highly water dependent and thus are the most vulnerable to periods of water scarcity (Connor and Chaves Pacheco, 2024).

[1] Using between 40% and 80% of available renewable water supplies.

Socio-economic development largely drives most trends in sectoral water demand. A critical trend is the rising water demand for domestic/municipal water supply and sanitation services, especially in the rapidly growing urban settlements of lower-middle- and upper-middle-income countries. There is increasing competition between municipalities and farmers over limited water resources in periurban areas (United Nations, 2023; 2024). Water demand from industry appears to have been decreasing over the past two decades, especially in high- and middle-income countries, a trend that may indicate improvements in water-use efficiency. Population growth – often cited as a key historical driver of water demand – does not appear to have a high direct influence on recent water demand, as countries with the fastest growing populations are also where per capita water use is the lowest (United Nations, 2025). However, population growth indirectly affects water use via growing demands for water-intensive products, including food.

Progress towards Sustainable Development Goal 6

Sustainable Development Goal (SDG) 6 seeks to ensure the availability and sustainable management of water and sanitation for all, focusing on drinking water and sanitation, water quality, water-use efficiency, integrated water resources management (IWRM) and transboundary water cooperation, water-related ecosystems and the enabling environment through support to developing countries and local engagement. Through the 2030 Agenda for Sustainable Development, countries committed to engage in systematic follow-up and review of progress towards the goals and targets, using a set of global indicators.

None of the SDG 6 targets are on track to be accomplished by 2030 (Figure P.1).

Figure P.1 Progress status of Sustainable Development Goal 6 targets, 2025

Source: United Nations (n.d.).

As of 2024 (latest data available), 26% of the world's population still lacked access to safely managed drinking water services (SDG Indicator 6.1.1) and 41% did not use a safely managed sanitation service (SDG Indicator 6.2.1a) (UN-Water, n.d.).

As of 2023 (latest data available), only 56% of the world's domestic wastewater was safely treated and 56% of the world's monitored water bodies had good ambient water quality (SDG Indicator 6.3.1). The degree of IWRM implementation at the global level was 57% (SDG Indicator 6.5.1), and only 59% of the world's transboundary basin areas had an operational arrangement for water cooperation (SDG Indicator 6.5.2) (UN-Water, n.d.).

At the time of writing of this report, the data concerning other SDG 6 targets have not been updated since 2023.[2]

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[2] For detailed and up-to-date metrics, supplementary information and links to background reports on progress towards all SDG 6 targets and indicators, see UN-Water (n.d.).

Chapter 1

Introduction

UNESCO WWAP
Laura Verónica Imburgia and Richard Connor

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Access to safe and affordable drinking water and sanitation services, and to adequate water supplies for various other purposes, is essential for the fulfilment of the most basic needs and fundamental aspirations of all human beings. These range from health to food security, education and sustainable livelihoods. Yet, in many parts of the world, water stress is increasing due to the combined effects of increasing water demand, climate change and ecosystem degradation.

Although tangible progress in the provision of drinking water, sanitation and hygiene (WASH) services has been made since the launch of the Transforming our World: the 2030 Agenda for Sustainable Development in 2015, significant disparities persist (General Assembly of the United Nations, 2015; WHO/UNICEF, 2025). The poorest and most vulnerable of the world's population remain the most affected, including those living in informal settlements, rural communities and refugee settlements. When access to WASH is lacking, women and girls often disproportionally bear the responsibility for providing water to households. This frequently results in hard physical labour, mental stress and personal insecurity as they travel to and from water sources, and encroaches on the time available for education, productive work and social activities. Lack of access to WASH facilities befitting the needs of women and girls further exacerbates the risks to their safety and dignity and increases health and psychological burdens. Thus, promoting gender equality through access to adequate WASH services can lead to tangible health, social and economic benefits.

Women are generally under-represented in the governance and management of water supplies, especially for agricultural and other productive uses, as well as for financing and water-related infrastructure development. This can hinder their access to water resources and the equal sharing of benefits, threatening their livelihoods and food security. For example, women smallholder farmers who rely on irrigation can be disadvantaged when access to water supplies are impeded or restricted.

There has been tremendous progress in the recognition, enactment and application of women's rights over the last century. Many women – as leaders, scientists, practitioners and activists – have been leading the societal changes required to overcome gender-based inequalities. In fact, the past few decades have seen a growing number of women involved in technical, operational and political roles in water management and governance. Nevertheless, this progress has been uneven and dependent upon, for example, cultural traditions, economic backgrounds and educational opportunities. In many places, gender disparities continue to be a serious problem in the use and management of water supplies.

Given the fundamental significance of water in all aspects of life, and the accumulating threats to this vital and unique resource, reducing gender imbalances in the access to water and sanitation services requires thorough actions. Bold efforts are needed to overcome existing challenges to the equal rights and opportunities for women and men in access, use and control of water, and to their equitable and meaningful participation in water governance. Such efforts in times of political, economic and environmental crises are more difficult than ever and cannot be achieved with only part of society. The voices, capacities and leadership of all are therefore required.

1.1 Purpose and structure of this report

Titled *Water for All People: Equal Rights and Opportunities,* this report provides a comprehensive, evidence-based summary of the linkages between, and progress towards, water and gender equality.

Water-related technologies, access to scientific and Indigenous water knowledge, legal frameworks, institutional dynamics, management and governance practices, and financing strategies, at every scale, have consequences for gender dynamics,[3] several of which may be unintended or even counterproductive to their original purpose. Accordingly, this

[3] 'Gender dynamics' refers to the relationships and interactions between and among genders, and are informed by sociocultural ideas about gender and the power relations that define them (EIGE, n.d.).

report addresses gender equality with substantive discussions focusing on women and girls, on whom inadequate or unreliable water access imposes an unbalanced burden arising from their disproportionate and generalized responsibility for unpaid care, domestic and communal work. It also highlights several approaches to better understand the intersections between the technical and social aspects of water across various domains. The report is structured as follows:

- The Prologue offers a short summary of status and trends related to the use and availability of global water resources and progress towards the water and sanitation targets of the 2030 Agenda.

- The thematic chapters explore key challenges, gaps in knowledge and structural inequalities through drinking water, sanitation and hygiene in human settlements (Chapter 2); food and agriculture (Chapter 3); industry, business and energy (Chapter 4); climate change and hydrometeorological disasters (Chapter 5); and ecosystems (Chapter 6).

- The regional perspectives chapter (Chapter 7) spans a wide range of diverse geographic contexts, identifying major region-specific challenges to gender equality in water access and management, and discusses appropriate responses.

- The response chapters discuss data, education and capacity development (Chapter 8); governance (Chapter 9); and financing and investment (Chapter 10).

- Chapter 11 provides a summary of the key findings and main conclusions.

The report draws attention to intersectoral analyses, addressing local and global responses, and emphasizing positive examples of how challenges can be addressed successfully. The following tenets have guided the overall approach and analysis:

- Gender roles and relations are neither homogeneous nor static. In many cases, multiple forms of gender roles and relations coexist.

- Obstacles to gender equality in water vary from place to place, ranging from the household level to national legal and regulatory frameworks, and are sometimes a result of discriminatory norms and stereotypes that induce negative repercussions on women and men.

- While indicators of gender equality in the water domain may be difficult to measure and interpret, and robust sex-disaggregated data are significantly lacking in many cases, appropriate methodologies and tools are available. Sufficient empirical evidence allows for a fact-based analysis and to justify the findings and potential responses presented throughout this report, as well as its overarching conclusions.

1.2 Policy context of water and gender equality

In 1979, the General Assembly of the United Nations adopted the landmark Convention on the Elimination of All Forms of Discrimination against Women, explicitly calling for substantive equality and non-discrimination on the grounds of gender (CEDAW, 1979). Building on these principles, the last few decades have seen significant advances in the development of international normative and policy frameworks for gender equality and women's rights. The Beijing Declaration and Platform for Action, adopted in 1995, set forth a road map for achieving gender equality and ending discrimination against women at all levels (FWCW, 1995; UNESCO WWAP, 2021).

In 2010, the General Assembly of the United Nations recognized *"the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights"* (General Assembly of the United Nations, 2010). Safe and clean drinking water and sanitation were further recognized as two distinct and fundamental human rights in 2015 (Box 1.1).

Box 1.1 Promoting a gender-based approach to the human rights to water and sanitation

In 2015, the General Assembly of the United Nations further affirmed that the human rights to safe drinking water and sanitation are components of the right to an adequate standard of living and essential for the full enjoyment of the right to life; and recognized that such rights "*entitle everyone, without discrimination, to have access to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use, as well as to have physical and affordable access to sanitation, in all spheres of life, that is safe, hygienic, secure, socially and culturally acceptable and that provides privacy and ensures dignity*" (General Assembly of the United Nations, 2016, p. 4). In the same resolution, the General Assembly called upon States "*to promote both women's leadership and their full, effective and equal participation in decision-making on water and sanitation management and to ensure that a gender-based approach is adopted in relation to water and sanitation programmes, including measures, inter alia, to reduce the time spent by women and girls in collecting household water, in order to address the negative impact of inadequate water and sanitation services on the access of girls to education and to protect women and girls from being physically threatened or assaulted, including from sexual violence, while collecting household water and when accessing sanitation facilities outside of their home or practising open defecation*" (General Assembly of the United Nations, 2016, p. 6).

Furthermore, the Sustainable Development Goals (SDGs) of the 2030 Agenda identify gender equality and universal access to safe and adequate water as foundational priorities in human development. Recognizing this interconnection is essential for achieving SDG 5 (gender equality and the empowerment of women and girls) and SDG 6 (clean water and sanitation for all), while including additional development objectives related to health, education, food security and peace, among others.

Regarding other specific instruments, the United Nations Framework Convention on Climate Change developed the Lima Work Programme on Gender as an explicit call to action in 2014 (UNFCCC, 2015). This in turn led to the formal recognition of climate change and gender linkages in the Paris Agreement (2015), including considerations of the rights of women, Indigenous Peoples and local communities, with the mandate to integrate gender-responsive adaptation actions (United Nations, 2015).[4] In parallel, the Sendai Framework for Disaster Risk Reduction 2015–2030 recommended the integration of gender perspectives into all disaster risk management policies and plans (UNISDR, 2015).

These global initiatives demonstrate that: (a) the wide recognition of gender equality is of critical significance for poverty reduction, climate change adaptation and mitigation, and the protection of natural resources; and (b) multiple interconnections between human development objectives and gender issues exist and must be considered. Thus, this report includes discussions on how normative and policy frameworks translate into problem analysis, programme design principles and strategic action implementation in the water domain.

[4] During the twenty-ninth session of the Conference of the Parties (COP 29), Parties agreed to extend the enhanced Lima Work Programme on Gender for ten years, with the commitment to consider and then adopt a new Gender Action Plan during COP 30 (November 2025) (UNFCCC, n.d.).

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1.3 Principles, concepts and frameworks

There are several definitions of gender and gender-related concepts (e.g. Hall et al., 2021). However, there is a lack of consensus or unity in the designation and specific use of various terms, which recent international instruments have left undefined (Grey, 2025).

For the purposes of this report, 'gender equality' is understood as the equal enjoyment of rights, responsibilities and opportunities for all people, regardless of their sex and/or gender. It requires that the interests, needs and priorities of women and men, in all their diversity, are equally considered. These are prerequisites for the realization of "*the full human rights and potential to contribute to national, economic, social and cultural development, and to benefit from the results*" for all people (UNESCO, 2014, p. 60). Equality in the water domain entails there are equitable opportunities for all to meaningfully participate in the management of water resources. As such, gender equality is considered in this report as an essential path towards fair and just access to, and use of, water.

Because improved gender equality can be a cause and a consequence of women's empowerment, the term 'women's empowerment' is often used in the gender literature. It describes the 'multidimensional process of change' that involves how women perceive themselves at a personal level and in public, how they exercise their ability to act and decide by themselves ('agency' and 'autonomy') and how they participate on equal terms with men in reshaping society to overcome gender-based inequalities (Kabeer, 2011).

Traditional gender roles and the gendered division of labour can dictate who collects water and how it is collected, who makes decisions about water in households and communities, and who benefits from water-related investments. These roles are not biologically predetermined, they are socially constructed and assigned (Agarwal, 1995). Political, social and financial power structures shape and sustain access to and control over water and to other related natural resources, such as land (Rocheleau et al., 1996; Elmhirst, 2015). Therefore, millions of women and girls remain constrained by structural inequalities driven primarily by unequal social relations and financial disadvantages.

The 'leaving no one behind' paradigm (UNESCO WWAP, 2019) recognized that previous efforts have not been enough to overcome the social inequalities that hinder progress in achieving international commitments on gender equality in water.

As alleviating gender inequalities in the context of water means engaging with systems of decision-making that have traditionally been led by men, legal frameworks and international guidelines have come to recognize the need to integrate gender perspectives into water management and governance instruments. This is reflected in several international frameworks, policies, declarations and commitments, as noted above. To navigate the intertwined social, cultural and technical dimensions of water, three types of operational approaches for integrating a gender equality perspective have been adopted in water policy development,[5] including project funding:[6]

- **Gender-sensitive approaches** identify and acknowledge the existing differences and inequalities between women and men.
- **Gender-responsive approaches** identify and acknowledge the existing differences and inequalities between women and men and articulate policies and initiatives to address the different needs, aspirations, capacities and contributions of women and men.
- **Gender-transformative approaches** implement actions and initiatives that challenge existing discriminatory policies or practices and carry out changes for the betterment of quality of life for everyone.

While transformative water policies and practices are the most desirable ones to achieve gender equality, they are the most challenging because they require significant changes to long-standing structures and norms. Therefore, all three gender-aware approaches are considered to contribute towards gender equality, and examples of all three are offered in this report as constructive and positive examples of water policies.

Finally, water and gender equality should be considered in the interrelated context of technology, socio-economics and culture – a challenging but relevant task. This report provides a sound basis for such effort, and offers abundant information and guidance upon which strategic responses can be developed and implemented.

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[5] Illustrative examples include: the *UNESCO Priority Gender Equality Action Plan: 2014–2021* (UNESCO, 2014), the United Nations Development Programme's knowledge package for staff action plan development (UNDP, 2022) and the Organisation for Economic Co-operation and Development's recommended gender equality approach (OECD, 2025).

[6] Illustrative examples include: the Global Environment Facility though its gender equality guidelines (GEF, 2018) and the Food and Agriculture Organization of the United Nations flexible voluntary contribution-funded initiatives 2010–2025 (Innovative Gender-Responsive and Transformative Approaches for Inclusive, Resilient, and Sustainable Agrifood Systems) (FAO, n.d.).

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Chapter 2

Drinking water, sanitation and hygiene in human settlements

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Global access to drinking water, sanitation and hygiene (WASH) services improved significantly from 1990 to 2024, although major gaps remain. According to the World Health Organization (WHO)/ United Nations Children's Fund (UNICEF) Joint Monitoring Programme report, between 2015 and 2024, 961 million people gained access to safely managed drinking water services, increasing global coverage from 68% to 74%. About 1.2 billion people gained access to safely managed sanitation services, with global coverage increasing from 48% to 58% over the same period. Despite this progress, as of 2024, 2.1 billion people still lacked safely managed drinking water, while 3.4 billion lacked safely managed sanitation services and 1.7 billion lacked basic hygiene services at home (WHO/ UNICEF, 2025a).

According to the report, women and girls are most likely to be responsible for water collection. This can expose them to physical strain and safety risks, especially in remote or insecure areas. In addition, lack of privacy and safety because of poor sanitation facilities disproportionately affects women and girls, especially in urban slums and rural areas (WHO/ UNICEF, 2025a).

Carrying water can cause physical strain and injury. And women and girls may be confronted with gender-based violence on the way and even in their homes.

2.1 Human rights to safe drinking water and sanitation

The human rights to water and sanitation entitle all people access to safe and clean drinking water and adequate sanitation, provided equally and without discrimination (General Assembly of the United Nations, 2015). Fulfilment of these rights requires that all obstacles in access to safe drinking water and sanitation are removed, particularly for the most marginalized populations (De Albuquerque, 2014; Heller, 2022). This includes removal of impediments to equal participation of men and women in water governance (Heller, 2022).

Equal participation in WASH decision-making towards a gender-responsive WASH regime calls for: equitable representation and voice in water management bodies (see Chapter 9); consultations with women to understand their needs; organizing consultations such that women can attend; sex-disaggregated data to monitor progress (Heller, 2022; see Chapter 8); gender-separated meetings to promote open discussions; raising the profile of women's needs and voices in WASH policies; and recognizing that women in different life stages and circumstances have different WASH needs (IFC, 2007; UN-Habitat, 2008). Gender disparities in women's access, participation and leadership remain high in low- and middle-income countries (LMICs), despite the significant progress made since 2000 in access to WASH services and WASH decision-making globally (UNICEF/WHO, 2023).

2.1.1 Water for household needs

Up to 1.8 billion people live in households without water supplies on the premises. About 700 million of these people fetch water from improved or unimproved[7] sources (UNICEF/WHO, 2023). The gendered burden of domestic work begins at a young age, with girls between five and nine years old spending 30% more time, or 40 million more hours a day, on household chores than boys in 2016 (UNICEF, 2016). Women and girls aged 15 years and up are primarily responsible for water collection in seven out of ten such households. In addition,

[7] Unprotected wells and springs, vendor-supplied water or surface water.

girls under 15 (7%) are more likely than boys under 15 (4%) to fetch water. Globally, women and girls spend 250 million hours per day collecting water at the expense of time they could otherwise spend on education, leisure or economic activities (UN Women, 2024). In addition, carrying water can cause physical strain and injury. And women and girls may be confronted with gender-based violence (GBV) on the way and even in their homes.

Beyond access challenges, household water insecurity and unreliability can be significant stressors for women and girls. Fetched water may not be safe to access or use, reliably available nor sufficient for basic household needs. Rainwater harvesting as a (cheap and efficient) alternative is generally not promoted enough. Water insecurity could lead to food insecurity or poor hygiene (Jepson et al., 2017; Young et al., 2019). Even piped water supply can be intermittent in LMICs, meaning storage is needed, recontamination is possible and household water may need to be rationed between supply periods (Kumpel et al., 2017).

Social expectations can be such that women perform the invisible daily labour of managing, rationing and prioritizing, as well as the labour of caregiving when unsafe or unreliable water leads to illness in the household. Women in Uganda have described how pregnant women, tired but still expected to fetch water, end up with less food and water for themselves at a time of high caloric and water needs (Pommells et al., 2018). Little data are available on additional water-related labour once it has reached the home (Crider and Ray, 2022).

Social norms and taboos on sanitation and hygiene can have particularly negative impacts on women and girls. For instance, when there is no toilet inside the home, women, girls and boys may face the risks of injury and assault when seeking out sanitation facilities in the dark (Sorenson et al., 2011). Among countries with available data, women and adolescent girls in the poorest households and those older and with disabilities are the most likely to lack a private place to wash and change (UNICEF/WHO, 2023). Some cultures across Latin America and South Asia perceive menstruating women and girls to be impure, resulting in restricted access to water for cooking and washing, thus causing negative health outcomes (Karki and Espinosa, 2018; Baumann et al., 2019).

It is still a common practice in development research and programming to collect and present data with the household as the unit of analysis, with intra-household disaggregated data rarely presented. Even when a household has water, soap or a toilet, without sex-disaggregated data, intra-household access inequalities cannot be monitored or mitigated (Heller, 2022; see Chapter 8). When access to water is insecure or unreliable, without sex-disaggregated data, the intra-household burden of that insecurity remains unknown. Treating the household as a homogeneous unit can conceal and hinder alleviation of instances of gender inequality.

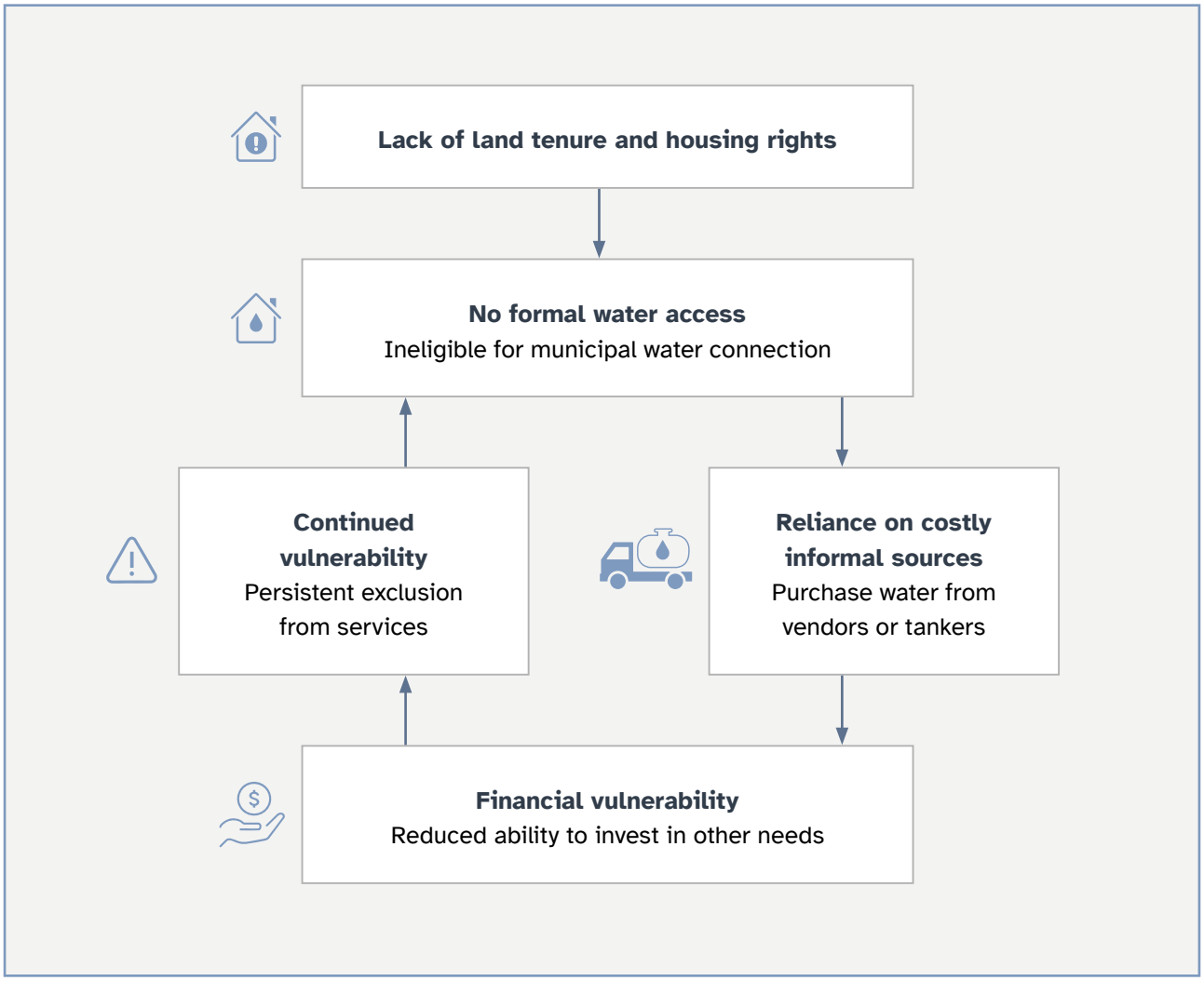
2.1.2 Water rights and housing security

Secure land tenure and housing rights are often a prerequisite for accessing municipal water and sanitation services (Frediani et al., 2023; Abdulhadi et al., 2024). Poor housing quality, insecure land tenure and housing discrimination can disproportionately affect women (Chant, 2013). With legal ownership or recognized tenure, residents are in a position to demand better services, including water and sanitation (UN-Habitat, 2021). Otherwise, residents of informal settlements may be denied these essential services. Figure 2.1 demonstrates the cycle of lack of land tenure and housing rights and WASH insecurity.

Poor housing quality, insecure land tenure and housing discrimination can disproportionately affect women

As heads of household, women may face significant impediments in accessing housing due to discriminatory practices and policies or limited financial resources (Chant and McIlwaine, 2015). Secure housing tends to come with better infrastructure, including (more) reliable water supply and sanitation systems (Sarmiento et al., 2020; Meehan et al., 2025). However, in many urban areas, women are more likely than men to experience insecure tenure and limited access to essential services. This inequality can

Figure 2.1 Lack of land tenure and housing rights and the drinking water, sanitation and hygiene insecurity cycle



Source: Authors.

exacerbate their vulnerability, limit their opportunities for advancement and impede secure access to WASH (Chant and McIlwaine, 2015; SWA, 2021).

Data have consistently shown those in precarious housing situations in the poorest settlements face higher costs for water than those connected to piped network, often relying on informal means of access (Hutton, 2012; Meehan et al., 2025). A study using data from the Nairobi Water and Sewerage Company for the period 2008–2018 showed residents living in slums often depended on informal water vendors who charged five to ten times more per litre. The slum residents were also four to six times less likely to receive the recommended 1,500 litres of water per person per month compared with those in middle- and high-income areas (Mutono et al., 2022).

2.1.3 Drinking water, sanitation and hygiene services in schools

Access to safe WASH in schools contributes to positive health, improved school attendance and, ultimately, better educational outcomes (Jasper et al., 2012). Yet, globally, 23% of schools lack basic drinking water services, 22% of schools lack basic sanitation services and 33% of schools do not have basic hygiene services. Sub-Saharan Africa is the furthest behind; less than half of schools have access to basic water (45%) and sanitation (50%), and only two in five schools have a basic hygiene service (37%). Overall, a twofold increase is needed to achieve universal access to basic water and sanitation in schools, and a fourfold increase to achieve the same for basic hygiene by 2030 (UNICEF/WHO, 2024).

Without water in schools, children cannot wash their hands before eating and after using a toilet. Girls cannot manage their periods with dignity and privacy. The lack of toilets and water for menstrual hygiene management can lead to shame-inducing experiences (McMahon et al., 2011); menstruating girls often go home and stay home for the day. Between 2016 and 2022, more than 10 million adolescent girls aged 15–19 years across 41 countries reported missing school, work or social activities during their last menstrual period (UNICEF/UN Women/Plan International, 2025). Reliable access to safe water near to or in toilet facilities is thus as important for girls' school attendance and performance as providing drinking water (Jewitt and Ryley, 2014).

Case studies of WASH initiatives in schools, such as the joint Action Caring Team/United Nations Environment Programme/United Nations Human Settlements Programme effort in Lok Urai, Malaysia, which introduced low-cost wastewater treatment systems and upgraded sanitation facilities in local schools and homes, show water pollution can be reduced while girls' school attendance can be measurably improved with safely managed WASH (UNEP, 2025).

2.1.4 Drinking water, sanitation and hygiene services in health care facilities

By 2018, 76% of births were in health care facilities, but poor hygiene conditions could compromise potential benefits and often dissuade mothers from delivering at such facilities (Bouzid et al., 2018). Clean water is known to be crucial for infection prevention during birth. WASH services provision was one of the top five maternal and reproductive health service demands of 1.2 million women in 2020 (WHO/UNICEF, 2020). A 2008 study from Nepal found neonatal mortality was reduced by 41% when birth attendants and mothers washed their hands with soap and water (Rhee et al., 2008). In Rwanda, a single day without clean water at a health care facility doubled the likelihood of infections among caesarean-section deliveries (Robb et al., 2020).

Representing 70% of the health workforce (ILO, 2017), women on the front line are significantly affected by unsafe working conditions. Nurses and midwives, who handle most services in maternity wards, are themselves at risk if there is limited access to water and toilets. They and their patients can be exposed to contamination (WHO/UNICEF, 2020). Sex-separated and well-maintained toilets should be available for staff and patients, and should include facilities for menstrual hygiene management. However, only 78% of health care facilities in LMICs have the basic water services to enable good hygiene (WHO/UNICEF, 2023). By 2020, many of these basic WASH services were not yet captured in health management information systems or in facility assessments and building regulations (WHO/UNICEF, 2020).

Access to safe WASH in schools contributes to positive health, improved school attendance and, ultimately, better educational outcomes

2.2 Drinking water, sanitation and hygiene insecurities and health

Climate change is exacerbating water scarcity worldwide, affecting the time, effort and risks associated with water collection and management. Water insecurities have significant implications for health – including mental health – particularly in rural areas of developing countries, where women and girls often bear the burden of water collection (UN Women, 2014; Jayaweera et al., 2022; United Nations, 2023). Unreliable and unsafe water supplies can have many negative health consequences. This section focuses on the health consequences of inadequate WASH for women and girls.

2.2.1 Physical health

The burden of water carrying and management (often rationing), disproportionately borne by women and girls, can have many physical ill effects (De Guzman et al., 2023). Daily water fetching can contribute to the occurrence of musculoskeletal injuries (1 litre of water weighs 1 kg; 50 litres per person per day is often considered the baseline need). Common complaints include neck pain, axial compression, upper and lower back pain, and joint pain (Geere et al., 2010; 2018). In 2020, 13% of households across 21 LMICs reported a water-fetching injury, including from falls, accidents, animal bites and physical confrontations when attempting to access water; women were more likely to report such injuries (Venkataramanan et al., 2020). Data across multiple countries have shown water fetching by pregnant women is associated with seeking less antenatal care (Geere et al., 2018). Moreover, women have been found to experience bladder and breast cancers, potentially associated with exposure to arsenic, trihalomethanes and trichloroethylene in drinking water (Gallagher et al., 2010; Smith et al., 2018).

Inadequate drinking water and sanitation services can contribute to mental and psychosocial health burdens such as fear, stress and depression

2.2.2 Mental health

Inadequate drinking water and sanitation services can contribute to mental and psychosocial health burdens such as fear, stress and depression (Bisung and Elliott, 2017; Wutich et al., 2020; Boateng et al., 2022; Toivettula et al., 2023). Women and girls are more prone to such WASH-related conditions. Stressors related to inadequate water services can exacerbate intra-household conflicts, intimate partner violence and child abuse. Additionally, they can induce feelings of shame and guilt due to the inability to provide safe drinking water, one of the expected responsibilities of 'good wives and mothers' (Stevenson et al., 2012; Van Houweling, 2016). When women and girls are required to use common latrines or collect water in emergency conditions, navigating access to WASH facilities can cause further mental stress, including threats to their dignity or to their person (Winter et al., 2018).

Water-induced stress has also been reported in low-income communities in the United States of America. For example, (mainly female) respondents in a Letcher County, Kentucky, study with coal mining pollution in the water supply reported shame and low self-esteem because their children smelled bad and had dirty clothes in church and at school (Blakeney and Marshall, 2009). Other urban residents whose water service had been cut off similarly reported the "*ripple effect, mentally and physically*" of shame at being unable to pay their bills, or because their children could not shower and felt embarrassed at school (Amirhadji et al., 2013, p. 36).

2.2.3 Menstrual health

Post-pubescent girls, women and gender non-binary people need increased WASH services (among other supplies) when they are menstruating (Crofts and Fisher, 2012; Sommer et al., 2015). Water is required for washing themselves, clothing and reusable sanitary cloths (if used). The lack of water and hygiene in these situations can cause shame and extreme anxiety, given the social taboos around menstruation in many societies, and has been linked to urogenital infections (Das et al., 2015). For menstruators, a lack of latrines and/or toilets with water access is a significant obstacle to gender equality, restricting mobility and full participation in public life.

WASH access problems can be compounded by inadequate infrastructure, low levels of education and health care on menstruation and reproductive health, and religious teachings or social and cultural norms that exclude menstruating women and girls from community activities (Sharma et al., 2022). For example, one report found only two out of five schools provide menstrual health education (UNICEF/WHO, 2024). When social silencing interacts with caste, the consequences can be especially dire (Baumann et al., 2019). It is extremely difficult to design policies, buildings or educational materials for a topic that it is barely possible to talk about in public.

2.3 Under-recognized risks and hazards

Little data are available on the most vulnerable women in the most at-risk populations, such as the unhoused, the displaced and the incarcerated (Heller, 2022). Particularly under-recognized (and often understudied) hazards to realizing the human rights to water and sanitation for all women and girls include: sexual harassment, GBV and coerced sexual acts; uncounted and unpaid labour on water management in households and communities; affordability of water for household needs; and problems faced by refugees and internally displaced persons.

2.3.1 Sexual harassment, gender-based violence and coerced sex

When water supplies and sanitation are absent, risks and discomforts for women and girls include the drudgery of carrying water, deliberately not drinking water so they do not need to go to the toilet, falling in the dark, attacks from animals (e.g. dogs and snakes) and fear of sexual (verbal and physical) assault (Sahoo et al., 2015). The risks of sexual violence, verbal harassment and rape, especially when walking to sanitation locations, have received considerable attention (Sorenson et al., 2011; Caruso et al., 2017; Gibbs et al., 2020). Sexual violence and sexual harassment are heinous violations of human rights, generating public health burdens with lasting physical and psychosocial consequences (WHO, 2024). Instances often remain under-reported because of the blame-the-victim stigma and fear of retaliation, and are therefore understudied within the WASH context (Sommer et al., 2015).

Coerced sex can occur when women are deprived of essential needs or services, at the intersection of extreme deprivation, extreme powerlessness and weak legal protection (SIWI, 2017; Merkle et al., 2023). In the WASH sector, it is enabled by unequal gender roles, insufficient water points, inadequate sanitation infrastructure, high prices and the widespread legacy of devaluing women's bodies (MacArthur et al., 2020; WIN, 2024a). Studies in Bangladesh, Colombia, Kenya and South Africa have uncovered several cases of threatened or realized sex for services (Merkle et al., 2023). While WASH deprivation is hardly the main cause of sexual coercion (Sommer et al., 2015), its impacts are long lasting. It remains under-reported and inadequately addressed because of shame, fear of retaliation and unclear legal recognition of its criminal nature. Secure WASH services provision becomes even more urgent seen in this light. There has been an ongoing campaign against coerced sex in Kenya with legislation in parliament (WIN, 2024b).

2.3.2 Uncounted and unpaid labour

Even when water is available at or close to a dwelling, social norms can dictate women carry out the work of storing, treating and rationing limited supplies for domestic needs such as drinking, cooking, hygiene and cleaning. Organisation for Economic Co-operation and Development analysis on women's economic empowerment concluded a reduction in physically demanding and time-intensive tasks such as collecting water leaves women with more time for paid work and studies, as well as for leisure and personal care (Farrant and Thim, 2019).

Activities that enable sustained water treatment programmes, such as education, peer-to-peer outreach or community mobilization, continue to target women and girls; these programmatic costs are rarely quantified and the women 'enablers' are often unpaid, with the unintended result of increasing women's level of 'unpaid' work (Cherukumilli et al., 2023).

2.3.3 Affordability

Some scholars have argued that when safe water supplies are sold at market prices, or when piped water tariffs are aimed at cost recovery from the users, such 'reforms' could exacerbate intra-household gender inequalities. The WASH community has often used the term 'low cost' to describe chlorine tablets or ceramic filters, for instance, without investigating the household's ability to pay, the opportunity cost of such payments or who pays. It is likely that some of these drinking water approaches are low cost, in part because the labour associated with use and maintenance goes unpaid (Caruso et al., 2023).

The affordability of water supply services is usually measured at the household level, as the ratio of the cost of water (including treatment) to household income. However, this simple ratio does not say if the household is using (or can afford) enough water for its daily needs; water might be affordable because consumption is tightly rationed. Moreover, anthropological research has long argued that the structure of the household determines affordability, and the cost of water competes with other essential needs. In addition, men and women may not have equal control over the household purse (Guiso and Zaccaria, 2023), and many cultures may have separate, and gendered, spending domains whereby the 'women's purse' is expected to pay for everyday expenses such as food, fuel, water or soap (Guyer, 1980). In this last instance, the total household income would not be relevant for calculating the affordability ratio.

The progressive removal of obstacles to access to water and sanitation, including discrimination, is required to fully realize the human rights to safe drinking water and sanitation

Affordability is a key dimension of the human rights to water and sanitation, but remains understudied and underappreciated as a gendered rather than a unitary-household phenomenon.

2.3.4 Problems faced by refugees and internally displaced persons

Refugees and internally displaced persons face severe but understudied WASH problems, including effects specific to women and girls. For example, shared standpipes translate into hours being in line, harassment of women and girls, and less time for learning, caring for children or earning. Disrupted services and poor sanitary facilities have resulted in exposure to waterborne diseases like cholera, which have highlighted the life-threatening effects of reduced WASH services (MSF, 2023). In addition to health, poor menstrual hygiene facilities can undermine the basic dignity of teenage girls and cause absenteeism from school.

In Dadaab and Kakuma refugee camps in Kenya, non-governmental organizations have helped introduce solar-powered boreholes and chlorination equipment. This has obviated a reliance on diesel pumps, providing greater reliability of supply and reducing the daily tasks for women and girls who once had to walk great distances to fetch water (Tado, 2015). In Dadaab camp, the implementation of prepaid 'water automated machines' within camp markets has provided equal opportunities for households (particularly women-headed households) to access affordable, safe water at convenient times of day, thereby reducing the risks of long queues and increasing transparency in distribution (Maalim and Kenya, 2021).

Such initiatives have illustrated the efficacy of gender-responsive WASH interventions for enhancing safety, health and human dignity for girls and women. However, the lessons learned have not yet been adequately captured in policy and documents. Systematically incorporating approaches into humanitarian planning and national water governance can help to ensure refugee women and girls do not fall behind in terms of meeting the human rights to water and sanitation.

2.4 Going forwards

The progressive removal of obstacles to access to water and sanitation, including discrimination, is required to fully realize the human rights to safe drinking water and sanitation. These include:

- obstacles to equal participation of men and women in decisions on water governance;
- the disproportionate burden of collecting household water, which denies women and girls the opportunity to engage in productive or social activities;
- cultural norms that restrict women's and girls' access to water and sanitation facilities when they need them the most;

- the implicit acceptance of GBV, harassment and other threats to safety while accessing household water and sanitation facilities; and

- the widespread stigma associated with menstruation.

Addressing WASH barriers requires responses that go beyond technical fixes, as these challenges are rooted in the complex interplay of politics, economics and culture. Some countries have tried to empower women in rural and periurban areas, by encouraging their voice and participation in WASH decision-making bodies on the kind of services they need or receive, and the location and condition of their facilities (UN-Habitat, 2008).

Box 2.1 highlights the integration of women into local WASH governance structures in Lao People's Democratic Republic, empowering them to move from passive beneficiaries to active decision-makers.

An example of gender-responsive WASH programming for health care facilities comes from WASH FIT, a risk-based management tool addressing WASH services across gender, equity, disability and social inclusion. A global evaluation by WHO and UNICEF found widespread adoption of the tool in more than 70 countries (WHO/UNICEF, 2025b). By 2023, 80% of implementing countries had reported improved WASH services, and 60% claimed improved patient satisfaction (UNICEF/WHO, 2024). In addition, use of the tool has allowed for improved patient (60%) and staff (50%) satisfaction (WHO/UNICEF, 2025b).

Another example, highlighted in Box 2.2, is the Zimbabwe Idai Recovery Project, which was "*designed to effectively address the urgent and mid-term recovery needs of individuals and communities affected by Cyclone Idai in 2019"* (World Bank, 2024, box 2, p. 15).

Box 2.1 Gender-transformative approaches to water supply and sanitation in Lao People's Democratic Republic

The project Enhancing the Climate and Disaster Resilience of the Most Vulnerable Rural and Emerging Urban Human Settlements in Lao PDR, funded by the Adaptation Fund and implemented by the United Nations Human Settlements Programme (UN-Habitat) and the Government of Lao People's Democratic Republic, has transformed access to water and strengthened climate resilience. Although the project centred on climate resilience and reducing vulnerabilities to climate-induced disasters, it included a gender-focused drinking water, sanitation and hygiene (WASH) component, embedding women's leadership across the entire process, from validating multi-hazard climate risk assessments to co-developing action plans and shaping infrastructure design. It integrated scientific data with community knowledge, where women were consulted and were also active decision-makers.

From 2017 to 2024, the initiative improved water access across 189 settlements in Attapeu, Saravan and Sekong provinces, directly benefiting 125,295 individuals, including 67,659 women and girls (54% of the total beneficiaries). Adopting a gender-responsive approach, the project ensured equitable outcomes through focus group discussions with women, children and populations at risk, and their participation in validating climate risk findings, co-developing action plans and guiding the design of infrastructure solutions. The Lao Women's Union played a pivotal role in ensuring women's involvement in designing water supply systems. Originally targeting a limited number of beneficiaries, the project tripled its reach, creating more opportunities for women and girls to pursue education, livelihoods and personal development.

One woman from Lahang village in Saravan Province shared: "*Before, I used to go twice a day to the river which is 20 minutes away from my village to collect water. During the dry season, I had to walk even more. Thanks to the project, now I have water in my own house. I am even able to grow vegetables in my garden.*"

Recognized with the 2025 UN-Habitat Gender Champion Award, the project stands as a global model for gender-transformative climate adaptation. By integrating women's leadership and equitable solutions, it highlights the role of gender equality in enhancing community resilience while addressing critical climate challenges.

Sources: Phongsa (2024) and UN-Habitat (2025).

Box 2.2 Entry points for integrating gender considerations into resilient infrastructure: the Zimbabwe Idai Recovery Project

Through a multifaceted approach, including immediate support for cyclone recovery, medium-term recovery, and resilience-building, the project catalysed sustainable recovery efforts and fostered the long-term well-being and resilience of affected communities in Zimbabwe.

Key interventions:

1. Gender-based violence [GBV] considerations

- Safer latrines and water points: Constructing safer latrines and strategically locating water points not only reduced the distances women and girls had to travel daily but also minimized their exposure to potential violence, which is especially critical during post-disaster periods when disrupted social and physical environments can raise travel and GBV risks.

- Enhanced lighting at night: Implementing adequate nighttime lighting in community areas significantly enhanced safety, enabling women to move more freely and securely at night.

2. Empowerment of women

- Access to new roles: By providing women access to roles previously unavailable to them, such as village pump minders and latrine builders, the project not only empowered women but also ensured their direct involvement in the rebuilding and resilience efforts post-disaster, promoting quicker community recovery and sustainable gender equality.

- Skill development through training: Training 40 women as village pump minders and 24 as latrine builders equipped those women with vital skills for maintaining critical infrastructure that is necessary for effective disaster response and recovery. This empowerment also translates into enhanced community resilience.

- Improved latrine design: Enhancing latrine designs with features such as locks, privacy screens, and hygiene kits increased the safety and dignity of women in the aftermath of the disaster – when women's privacy and security are often compromised.

- Gender-friendly sanitation facilities: Ensuring that staffing for sanitation facilities had a minimum 50% female recruitment rate promoted gender equality in service access and management, which is necessary for balanced recovery efforts.

3. Supportive environment for caregivers

- Menstruation-related sick leave: The provision of sick leave for menstruation-related issues ensured that women received full salaries during such absences. This important support mechanism maintains the economic stability of female caregivers during disaster recovery.

Impact: These interventions collectively contributed to promoting positive gender outcomes and fostering empowerment, equality, and safety for women in cyclone-affected communities. By prioritizing women's unique needs and reducing risks such as GBV, these measures ensured safer access to essential services. The interventions also empowered women through new skill development and employment opportunities, enhancing their confidence and roles within the community. Furthermore, improved sanitation designs and supportive policies created a safer and more dignified environment. These efforts helped to build a more inclusive, resilient recovery to benefit all community members.

Source: World Bank (2024, box 2, p. 15).

2.5 Conclusions

This chapter has discussed how gender inequalities in WASH services occur as part of a pattern of other inequalities and discriminatory social practices. These include land and housing discrimination, legal practices and institutions that have internalized gender norms and expectations, limited opportunities for women to exercise leadership (as opposed to labour) in water management, and widely prevalent indicators of WASH costs, benefits and affordability that render women's specific needs and work invisible. A range of physical and mental health consequences disproportionately affect women when water for WASH services is unable to meet their basic needs. GBV and domestic violence have also been linked to WASH insecurities. Strengthening national policy on menstrual hygiene to give more priority to WASH in schools, work and public places could allow more women to participate in community activities. And widening education to include menstrual hygiene management could help to overcome the associated taboos.

Alleviating gendered inequalities in WASH calls for interventions that go beyond technical fixes to those that address structural and social inequalities. Global examples demonstrate that when women's participation is designed to encourage leadership and voice, as opposed to merely checking boxes (Heller, 2022; see Chapter 9), women are active agents of change for gender equality and WASH equity.

As described throughout this chapter, concerted action is urgently required in order to:

- **Strengthen legal, institutional and community responses to sexual coercion in WASH.** Legislation should be reviewed to explicitly define and criminalize sexual coercion. Accountability frameworks should also be developed to track enforcement.
- **Disaggregate data by sex and age at the household level and integrate gendered time-use and affordability data into WASH research and policy frameworks.** WASH affordability assessments should consider women's limited control over household finances and their disproportionate responsibility for WASH-related tasks. Research findings could then inform policy on unpaid work, care and domestic labour.
- **Acknowledge and improve research concerning WASH in refugee settlements and internally displaced person settings.** It is vital to work directly with refugee women and girls on research and knowledge-sharing to enable their voices to shape problem identification and solution development.

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Chapter 3

Food and agriculture

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3.1 Water-related gender inequalities in agriculture and food security

Agrifood systems are a major source of employment[8] and livelihoods. As of 2019, 36% of working women and 38% of working men were engaged in agrifood systems. In some regions, women's involvement has been even higher. In Sub-Saharan Africa, 66% of employed women were reported to work in agrifood systems in 2023 compared to 60% of men. In Southern Asia, the 2023 reported figures rose to 71% of working women compared to 47% of men (FAO, 2023a). The proportion of women working in agricultural production is higher in the poorest countries, where alternative livelihoods are not available. Often, women are unpaid family workers or casual workers in agriculture (Van Koppen and Hussain, 2007). On average, in 2023, women were reported to earn 18.4% less than men in wage employment in agriculture (FAO, 2023a).

Furthermore, women often have less control than men over the outcomes of their labour in agriculture. The degree to which they can decide on how to benefit from what they produce depends largely on intra-household power dynamics, which may be restricted by gender or social norms.

Access to water is essential for agricultural production, particularly in dry areas where increasing water insecurity due to climate change and environmental degradation threatens livelihoods, food security and nutrition. Access to and management of water in agriculture can be highly gendered and influenced by discriminatory sociocultural norms and other social factors such as age, ethnicity or class. Women and girls in rural areas may face greater obstacles to accessing and controlling water for irrigation, livestock, aquaculture and domestic use compared to men in many areas (Van Koppen and Hussain, 2007). Furthermore, even when women are involved in water management in agriculture, their role is often not recognized (see Chapter 9), limiting their power-sharing and economic potential.

Gender inequalities in access to land management of water resources in agriculture can negatively affect girls' access to education, women's livelihoods and empowerment, and household health and nutrition (FAO, 2023a). These inequalities exacerbate women's exposure to food insecurity. Globally, women face higher levels of food insecurity and malnutrition than men. This gender gap widened considerably during the coronavirus disease 2019 pandemic, then it narrowed from 2022 to 2023. New estimates show a widening of the gap between 2023 and 2024 (from 1.3 to 1.9 percentage points in the prevalence of moderate or severe food insecurity and from 0.6 to 0.8 for severe food insecurity). In terms of food security, no progress seems to have been achieved, as the gender gap in 2024 was about the same as it was in 2015, when the 2030 Agenda for Sustainable Development was launched (FAO/IFAD/UNICEF/WFP/WHO, 2025).

Agrifood systems are a major source of employment and livelihoods

Significant differences persist at the regional level. For example, the Latin America and the Caribbean region has the largest differences in the prevalence of food insecurity between men and women in the world (5.3 percentage points at the moderate or severe level and 1.3 percentage points at the severe level, in 2024) (FAO/IFAD/UNICEF/WFP/WHO, 2025). In-country disparities also exist; food insecurity is more prevalent in rural areas than in urban areas.

Outmigration is reshaping gender roles in agriculture. In many countries, there has been a rise in female-headed households because of male migration (FAO, 2018a). The impact of migration on women's empowerment (measured as decision-making in agricultural production, control over income, group membership and workload) depends on factors such

[8] *"Employment comprises all persons of working age who during a specified brief period, such as one week or one day, were in the following categories: a) paid employment (whether at work or with a job but not at work); or b) self-employment (whether at work or with an enterprise but not at work)"* (ILO, n.d.).

as household land ownership, women's position within the household and whether the household receives remittances (Slavchevska et al., 2021). For example, in Tajikistan, "*women in households with a migrant are more likely to be involved in decisions in productive activities on the household farm, control income, own assets and achieve workload balance than women in non-migrant households*" (Slavchevska et al., 2021, p. iii). And in Egypt, women are not always formally recognized as legitimate farm managers or decision-makers, limiting their access to land and water rights, credit and services (FAO, 2023b).

3.2 Structural impediments

3.2.1 Land and water rights

Access to land and water is strongly interconnected. In many contexts, water tenure depends on legally recognized land or forest rights. Therefore, land rights may be critical in determining women's ability to access, use and manage water resources.

Fewer than 15% of agricultural landholders were reported to be women in 2018 (FAO, 2018b). Between 2009 and 2023, data on Sustainable Development Goal (SDG) Indicator 5.a.1 showed that in 43 of the 49 countries reporting, fewer women owned agricultural land compared to men, with the share of men with ownership at least twice that of women in almost half the countries (FAO, 2025). Even when women owned land, they were less likely than men to hold legal documentation or to have their names formally registered, and they tended to own significantly smaller plots (FAO, 2018b).

Customary norms and legal frameworks in land and water tenure often hinder progress in gender equality. SDG Indicator 5.a.2 tracks where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control. The latest data show that only 17% of 84 surveyed countries provide high or very high levels of protection of women's land rights; 24% of countries offer medium levels of protection; while a striking 59% of countries provide low, very low or no protection at all. Legal protections for women's land rights vary significantly by region. Asia, Europe and Latin America generally have stronger inheritance laws and spousal consent requirements, while regions such as Sub-Saharan Africa and Western Asia lag behind (FAO, 2025). With regard to water tenure, water laws, in many cases, remain gender-blind, lacking provisions that account for the specific needs, roles and disadvantages of women. This invisibility can reinforce and perpetuate existing gender inequalities and discriminatory cultural norms. An assessment of 39 community-based water tenure regimes[9] found communities' legal rights to fresh water depended on their recognized land or forest rights in over 60% of community-based water tenure regimes. In addition, laws regulating community-based freshwater rights were typically gender-blind, with only one-third protecting women's specific rights to participate in freshwater governance (ELI/RRI, 2020).

Formal ownership of land and water resources does not guarantee control, especially when use rights (access and withdrawal) are distinct from control rights (management, exclusion and alienation). For decades, women have frequently held weaker use rights and lacked control rights, constraining decision-making authority (Schlager and Ostrom, 1992).

A gender-responsive water assessment conducted in Egypt showed prevailing gender and social norms have significantly influenced women's access to and control over land and water resources. According to 2014 data, although Egyptian law and the Islamic sharia grant women the right to own land, only 5% of agricultural land in Egypt was owned by women. The disparity was largely due to prevailing sociocultural inheritance norms, which resulted in women receiving significantly smaller shares than men in inheritance divisions, despite their legal entitlement (FAO, 2023b).

[9] "*[A] distinguishable set of national-level, government-issued laws and regulations governing all situations in which freshwater rights of use and at least either governance or exclusion are held at the community level*" (ELI/RRI, 2020, p. 8).

Cultural norms that restrict women's land and water ownership can constrain their capacity to access water technologies, engage in training opportunities or participate in water user associations (WUAs) and other irrigation management institutions, thus reinforcing their exclusion from decision-making processes in water governance and control over income (Wahaj and Hartl, 2007).

Women's water tenure security can improve when interventions adopt gender-transformative approaches to challenge patriarchal values. These include: ensuring joint registration of marital rights; documenting and demarcating land for female-headed households; closing gender gaps in knowledge of land rights; establishing robust enforcement mechanisms; reforming inheritance laws; strengthening women's associations; setting legal quotas for women's participation in land and resource governance bodies with training for meaningful engagement; and mobilizing collective action for equal access to services and local institutions that support land use (Scalise and Giovarelli, 2020).

3.2.2 Access to agricultural technology and irrigation

In 2023, the gender gap in land productivity between female- and male-managed farms of the same size was estimated at 24%, largely due to unequal access to resources such as water, technology, credit or extension services (Rodgers and Akram-Lodhi, 2019; FAO, 2023a).

Women farmers may face significant impediments in accessing digital agricultural technology – including for irrigation and water management – thus restricting their employment opportunities and constraining the full potential of agricultural systems worldwide (WEF, 2024). For example, in the Near East and North Africa region, although digital infrastructure has developed considerably over the past two decades, there is still a pronounced rural–urban and gender digital divide. Key obstacles include high cost and limited affordability, insufficient knowledge and technical skills (education and literacy rates are particularly low among rural women) and discriminatory social norms (FAO, 2023c). This digital divide can constrain women's access to efficient irrigation technology and water information, as well as finance. Many studies have highlighted the importance of promoting people-centred design processes, facilitating gender and marginalized group responsiveness and providing digital skills training in a way that is responsive to the needs of marginalized groups (Kemp-Benedict et al., 2009; Santini et al., 2012; FAO, 2019a).

Customary norms and legal frameworks in land and water tenure often hinder progress in gender equality

Data gaps do not allow a worldwide assessment of women's access and management of irrigation. However, case studies point to persistent inequalities. A comparative analysis of gender-based differences in agricultural productivity using household surveys showed female-managed farms were generally less likely to have access to irrigation than male-managed or jointly managed farms in countries like Ethiopia and Guatemala. However, in Cambodia and Peru, female-managed farms were more likely to be irrigated. In Uganda, no gender gap was observed, but overall irrigation rates were extremely low. Time-series data from five Sub-Saharan African countries suggested gender disparities were more pronounced where irrigation infrastructure was more widespread, as in Ethiopia and Malawi. Despite these variations, the overall use of irrigation remained low across most of the countries studied, and there was little improvement in gender gaps over time (FAO, 2023a).

A study conducted in Ghana and Zambia showed there have been gender differences related to the adoption of small-scale private irrigation technology. Female-headed households adopted irrigation at a rate of around two-thirds that of male-headed households. Female-headed households also tended to rely on labour-intensive manual irrigation techniques, such as hauling water with buckets, whereas male-headed households more often used motorized pumps and river diversion. Land ownership emerged as a key enabler. Women who owned plots showed higher adoption rates and greater decision-making power on irrigated land. Constraints such as heavy workloads, domestic responsibilities, and

less access to finance, equipment, electricity and markets have limited women's capacity to transition into irrigated agriculture (Van Koppen et al., 2012).

An analysis conducted by the Food and Agriculture Organization of the United Nations (FAO) Global Information System on Water and Agriculture (AQUASTAT) using agricultural census data from European countries has highlighted the gender disparities in access to irrigation in the recent past. In 2013, the percentage of irrigated land managed by women was significantly lower than that managed by men, and women operated smaller agricultural holdings, including those equipped for irrigation (FAO, n.d.a).

3.2.3 Exclusion from decision-making in agricultural water governance and management structures

Women's participation in integrated water resources management (IWRM) and governance remains low. As of 2023, out of 191 countries, only 27% reported high levels of women's formal representation or regular consultation in water governance processes (UNEP-DHI/GWP/UN Women, 2025; see Chapter 9). Such a low level of representation can limit women's ability to influence how water resources are allocated and managed, and may reinforce gender power imbalances in agricultural production.

Women's participation in WUAs, river basin organizations or irrigation committees has generally been low (Meinzen-Dick and Zwarteveen; 1998, Imburgia et al., 2020). Women's exclusion from decision-making in agricultural water management is rooted in gender-based impediments and unequal power relations that are structural, institutional and socio-cultural. One major constraint lies in the membership rules of WUAs that exclude women. These rules often require individuals to be formal landowners or heads of households, which are criteria more commonly met by men due to prevailing patterns of land tenure and inheritance. As a result, many women are not considered eligible for membership, despite their active role in agricultural production and water management.

For example, in Argentina, Azerbaijan and Ethiopia, land tenure has determined women's participation in WUAs (Merkle et al., 2012; Imburgia et al., 2020). Except for in female-headed households, women often lack legal ownership of the household plots they cultivate in those countries. Influence is also unequal, as WUAs often allocate votes in proportion to the size of titled holdings within the service area. This is a rule that can disadvantage members with smaller or fewer registered parcels of land (Merkle et al., 2012).

In addition, lower literacy rates (due to limited access to education and restrictive cultural norms) among rural women can reduce their ability to engage in formal institutional processes. Lack of time, due to women's disproportionate responsibility for unpaid domestic and care work, livestock production and other agricultural activities may also restrict women's involvement in community-level governance structures. Furthermore, social norms that confine women's roles and mobility to the household or nearby fields can marginalize them from participating. In the particular case where WUAs are newly established as part of irrigation management transfer programmes, exclusion is often reinforced by planners' preconceived notions of who the users are. These programmes have frequently linked participation with canal maintenance or infrastructure rehabilitation, which are activities seen as men's work (Meinzen-Dick and Zwarteveen, 1998; Khandker et al., 2020).

3.2.4 Climate variability and change

Climate variability and change, and environmental degradation, can exacerbate gender inequalities, particularly in rural areas of low- and middle-income countries (UN Women, 2025). The impacts of extreme climatic events, such as floods or droughts, are not experienced equally across populations. A study of 109,341 rural households in 24 countries, indicated that floods can increase the income gap between poor and non-poor households by more than 4%. Women are disproportionally affected: a 1°C increase in long-term average temperatures reduces the income of female-headed households by 34% more than that of male-headed households and women's weekly labour hours can increase by 55 minutes relative to men (FAO, 2024). These disparities are closely linked to water access and management.

Women farmers have typically less secure water and land rights and reduced access to irrigation and finance services. When climate shocks affect water availability (salinization, pollution, drying) or disrupt water infrastructure, women may face longer water collection times and greater losses in productivity and income, reinforcing vulnerability.

Climate exposure also intervenes in widening the gender gap. Female-headed households are more likely to live in hotspots where temperatures are rising fastest and floods recur more frequently, partly because male outmigration under climate stress leaves women as de facto heads of household in high-risk areas (FAO, 2024).

These findings show that gender inequalities should be taken into account when designing climate-resilient water strategies in agriculture. However, climate actions in nationally determined contributions and national adaptation plans only marginally mention women in rural areas. In 2017–2018, just 1.7% of tracked climate financing reached vulnerable small-scale producers, while only 3% supported climate adaptation in agriculture, forestry and other land uses (FAO, 2024). Only 6% of nationally determined contributions even mention women in a significant manner and only 39% of countries (25 out of 64 reporting) have established national coordination mechanisms to integrate gender equality into climate policymaking across sectors (UN Women/DESA, 2025).

3.3 Responses

Promoting gender equality in agricultural water management is a powerful development opportunity. Closing gender gaps in access to resources, services and decision-making can generate substantial economic and social benefits. In particular, closing the productivity and wage gaps between women and men could increase global gross domestic product by an estimated 1% (equivalent to nearly US$1 trillion) and reduce the number of food-insecure people by 45 million (FAO, 2023a).[10]

A number of strategic responses addressing the structural impediments and promoting more inclusive and equitable water access and management in agrifood systems are available.

3.3.1 Global policies and programmes

United Nations agencies and international frameworks are increasingly recognizing the need to strengthen policies and programmes that promote women's equal access and participation in water management. The Convention on the Elimination of All Forms of Discrimination against Women, in its General Recommendation No. 34 on the rights of rural women, considers rural women's rights to land and water resources to be fundamental human rights. It calls on governments and the international community to take measures to achieve substantive equality for rural women in relation to land and natural resources. This includes the design and implementation of comprehensive strategies to eliminate discriminatory stereotypes, attitudes and practices that may hinder women's rights to land and water (CEDAW, 2016).

Several policy instruments have sought to advance gender equality in water governance for agriculture, including:

- The *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* (FAO, 2012), endorsed by the Committee on World Food Security (CFS) in May 2012. These provide an international framework for the recognition and protection of the legitimate tenure rights of all, including women and marginalized groups, and urge states to ensure tenure systems are gender equitable, transparent and inclusive. Although focused on land, fisheries and forests, the Guidelines acknowledge that

[10] These figures are based on the calculation of the gender gaps in farm productivity and wage gaps in agriculture to measure the income gains from reducing those gaps and then simulating the potential impact on food insecurity using income elasticities derived from the food insecurity Tobit model (FAO, 2023a).

secure tenure rights are intrinsically linked to access to water, particularly in agriculture where land and water use are closely interdependent. The Guidelines were accompanied by 12 technical guides, including one to support the achievement of responsible gender-equitable governance of land tenure: *Governing Land for Women and Men: A Technical Guide to Support the Achievement of Responsible Gender-Equitable Governance Land Tenure* (FAO, 2013).

- The *CFS Voluntary Guidelines on Gender Equality and Women's and Girls' Empowerment in the Context of Food Security and Nutrition* (CFS, 2024), endorsed by the CFS in 2023. These provide a global policy tool to support governments and stakeholders in advancing gender equality in agrifood systems. They call for targeted policies to secure equitable access to and control over natural resources, including water. They emphasize the importance of ensuring gender-equitable tenure systems, supporting women's participation in WUAs and irrigation governance, and addressing discriminatory social norms and gender stereotypes that exclude women from decision-making. These Guidelines encourage integrated strategies that link water access and land rights, education and economic empowerment of women and girls.

- The Global Dialogue on Water Tenure and Principles for Responsible Governance (FAO, n.d.b). While the governance of land, forests and fisheries tenure has advanced following the endorsement of the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security,* water tenure has remained underdeveloped due to the shared and fluid nature of water. In response, FAO, mandated by its Committee on Agriculture in 2022, launched a Global Dialogue on Water Tenure to discuss the principles of water tenure with FAO Members. The principles recognize that women have important water management responsibilities, unique water needs and differentiated priorities for water use and management, yet are frequently excluded from decision-making. They call for gender-sensitive policies, clear alignment of various legal frameworks (e.g. inheritance and marriage laws) that can affect the water tenure rights of women and girls, and ultimately the recognition and protection of equal water tenure rights for women and girls, including rights to participate in resource governance and decision-making. FAO is facilitating country-, regional- and sector-level dialogues to discuss the principles through a global political process under the CFS. The process will end with a Global Water Tenure Dialogue in late 2026.

There are also some global initiatives that recognize the critical role of women in agriculture and food systems and which call for gender-transformative actions. These offer powerful advocacy platforms to drive policy change, resource mobilization and inclusive, equitable and sustainable food systems, including water management. Two examples are:

- The United Nations Decade of Family Farming (2019–2028) places gender equality at the centre of its vision. Through its *Global Action Plan,* it calls on governments and stakeholders to advance gender equality in family farming and the leadership role of rural women (FAO/IFAD, 2019).

- The 2026 International Year of the Woman Farmer, designated by the General Assembly of the United Nations, presents a unique opportunity to recognize women's contributions to agrifood systems worldwide. The year will serve as a platform to raise awareness, promote dialogue between stakeholders, share good practices and accelerate action to remove structural impediments (General Assembly of the United Nations, 2024).

3.3.2 Enhancing access to irrigation technologies and knowledge

Improving women's access to irrigation can be transformative for people's livelihoods. However, interventions should be based upon a clear understanding of the gendered organization of farming systems and the intra-household power dynamics that determine who controls the benefits of the outputs (Doss, 2001; Van Koppen and Hussain, 2007; Theis et al., 2017).

Where farming is female or jointly managed, targeting women in irrigation projects has shown benefits in terms of production gains and gender equality. For example, the Transforming Irrigation Management in Nigeria programme, funded by the World Bank, has rehabilitated and expanded irrigation infrastructure and promoted men's and women's participation in irrigated farming. For women who received support through the programme, access to water has increased crop yields by up to 60% and has enhanced their economic independence and household contributions (World Bank, 2024).

Where male farming prevails and women face restrictive norms in terms of decision-making and resource rights, improving irrigation access alone may be insufficient to promote gender equality. Interventions should also confront structural economic and cultural discrimination that limits women's productive potential (Van Koppen and Hussain, 2007).

Improving access to irrigation may provide benefits that go beyond enhancing agricultural production. Irrigation technologies can reduce labour and time burdens. When designed as multiple-use water services, they can support domestic and productive needs, in particular in poor rural areas where infrastructure may be limited. Men and women may have different priorities in terms of technology and associated benefits. For example, in Ethiopia, Ghana and United Republic of Tanzania, men have prioritized profit and labour savings, whereas women have emphasized profit and the ability to use water for multiple uses, which also entails saving time and labour (Theis et al., 2017).

Technology choices can shape the outcomes of interventions. In India, projects that paired the adoption of time-saving technologies, including irrigation, with interventions designed to strengthen women's decision-making power, achieved better outputs in terms of improved household dietary diversity and income, compared to interventions that promoted women's participation in agriculture without addressing their labour burden (Gupta, 2024). In Egypt, adapted irrigation technologies, such as *tatweer*,[11] which allow control over scheduling, thus reducing the need for night irrigation, and use simple on/off switches, as well as sprinklers and drip irrigation, have successfully increased women's participation in irrigation. These technologies lower physical labour demands compared with traditional surface methods and movable pipes, making water application safer and more manageable for women farmers (Najjar et al., 2019). In Gambia, improving women's access to solar-powered irrigation technology has had a transformative impact on livelihoods, food security and climate resilience. It has reduced the time and physical burden of water collection, increased women's incomes nearly eightfold, and strengthened community ownership and sustainability through local training (FAO, 2022).

Improving access to irrigation may provide benefits that go beyond enhancing agricultural production

The promotion of collective action by strengthening women's groups and grass-roots organizations can amplify these gains. One example is the Dimitra Clubs, promoted by FAO, which have been enhancing community empowerment and women's leadership in rural areas of Sub-Saharan Africa since 2008. These self-organized, voluntary groups – comprising women, men and young people – enable communities to identify challenges and mobilize solutions. Dimitra Clubs have contributed to women's social and economic empowerment and also to broader outcomes such as social cohesion and positive behavioural change at household and community levels. For example, in Niger, Dimitra Clubs have successfully supported women's groups in securing land rights and mobilizing resources for small-scale irrigation infrastructure. The Clubs have also facilitated women to speak publicly, thereby helping to address discriminatory social norms and practices (FAO, 2019b).

[11] A traditional irrigation system that distributes water to farmlands through a network of lined canals, reducing water loss. The irrigation system can be a combined gravity and water lifting system.

Access to training is key for adopting irrigation technologies, as women and men often face different constraints and preferences to participate in learning activities. Farmer field schools have been effective to reinforce technical capacities and promote women's participation in training activities. While focusing on empowering farmers in general, these programmes have succeeded in empowering women in agrifood systems, transforming the ways in which they act and are perceived within their communities. Women represent a large share of participants worldwide. This can help to break down gender impediments, reduce and overcome gender gaps, and empower women to actively participate in farm management, decision-making and leadership roles, thereby transforming the lives of women and also their communities. Moreover, these programmes are structured to reach low-literacy farmers, offering a supportive environment for experimentation and the adoption of diverse agricultural practices.

3.3.3 Improving sex-disaggregated data collection

Over the last decade, there has been an increase in the availability of sex-disaggregated data, particularly through national household surveys, labour-force data and some of the SDG reporting mechanisms (see Chapter 8). However, there are significant gaps in systematically collecting the gender dimensions of water access and management in agriculture, particularly on access to irrigation. Data limitations hinder the possibility to draw evidence-based conclusions about the needs and impacts of women and men in water access and control.

The absence of systematic and robust disaggregated data on women's access and participation in irrigation systems and WUAs makes it difficult to assess the effectiveness of gender interventions, policy reforms or investment in agricultural water infrastructure.

The Integrated Monitoring Initiative for SDG 6, coordinated by UN-Water, is undertaking a gender contextualization of global SDG 6 indicators. Gender considerations are being integrated into Indicators 6.1.1 (drinking water), 6.2.1 (sanitation and hygiene) and 6.5.1 (implementation of IWRM). Additionally, efforts are under way to reflect the gender dimensions of water-related targets, including SDG Target 6.4 on water-use efficiency and water scarcity, where agriculture – the largest water user by far – is central. Complementary, gender-contextualized Target 6.4 indicators have been developed to track equal opportunities and benefits, shared responsibilities, mitigation of adverse impacts and gender-responsive enabling measures related to water use in agriculture (FAO, forthcoming).

The Self-Evaluation and Holistic Assessment of Climate Resilience of Farmers and Pastoralists (SHARP) tool is designed as an instrument to assess the resilience of farmer and pastoralist households to climate change. The approach encompasses ecological and social elements. Following a survey-based evaluation of households' climate resilience, gaps and weaknesses in the response of farmers and institutions to climate variability are analysed. By collecting qualitative and quantitative data on the multiple dimensions compounding resilience at household level – including water access and management – with some questions disaggregated by sex and capturing gender dimensions, SHARP offers the opportunity to make a gender analysis of such aspects and critically explore the nexus between women's empowerment and resilience. The nature of the data collected through SHARP+ allows break down of the decision-making power beyond the gender of the household head and enables understanding of the nature of gender gaps and determinants of resilience (Hernández Lagana et al., 2022).

The gender-responsive indicators for water assessment, monitoring and reporting from the *UNESCO WWAP Toolkit on Sex-Disaggregated Water Data* (Miletto et al., 2019) provide a standardized set of 105 indicators across ten priority topics aligned with the 2030 Agenda to close the sex-disaggregated water data gap and enable gender-responsive, and ultimately gender-transformative, water policies. The Toolkit offers indicators that ministries, basin agencies, utilities and projects can adapt for national and subnational monitoring and reporting.

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Chapter 4

Industry, business and energy

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Industrial development is accelerating across low- and middle-income countries, increasing demand for water in manufacturing, energy and service sectors. At the same time, global efforts to achieve gender equality, including Sustainable Development Goal (SDG) 5, and ensure access to clean water and sanitation for all (SDG 6), have revealed persistent gaps in how women participate in and are affected by industrial water use. As the effects of climate change, urbanization and scarcity of resources grow more pressing, the intersection of women, water and industry is a critical yet underexplored policy priority. This chapter discusses challenges, sector-specific dynamics and potential responses for inclusive and sustainable development in the use of water in industry, business and energy.[12]

One of the guiding principles of the 1992 Dublin Statement on Water and Sustainable Development stated that "*Women play a central part in the provision, management and safeguarding of water*" (United Nations, 1992, p. 4). Nevertheless, the interrelationships of women, water and industry are still not well documented. Moreover, data are insufficiently disaggregated, and most publications present particular case studies from specific locations.

Women comprise 40% of the global workforce, of which 24% are employed in industry (World Bank, n.d.). Fifteen per cent of the total volume of freshwater withdrawals are due to industry (FAO, n.d.). Therefore, women in industry participate in the use of significant amounts of fresh water globally. The involvement of women in the industrial use of water can be examined from two distinct perspectives: the water services sector, providing drinking water and treating wastewater; and water-intensive industries, including energy production.

4.1 Employment in the water services sector

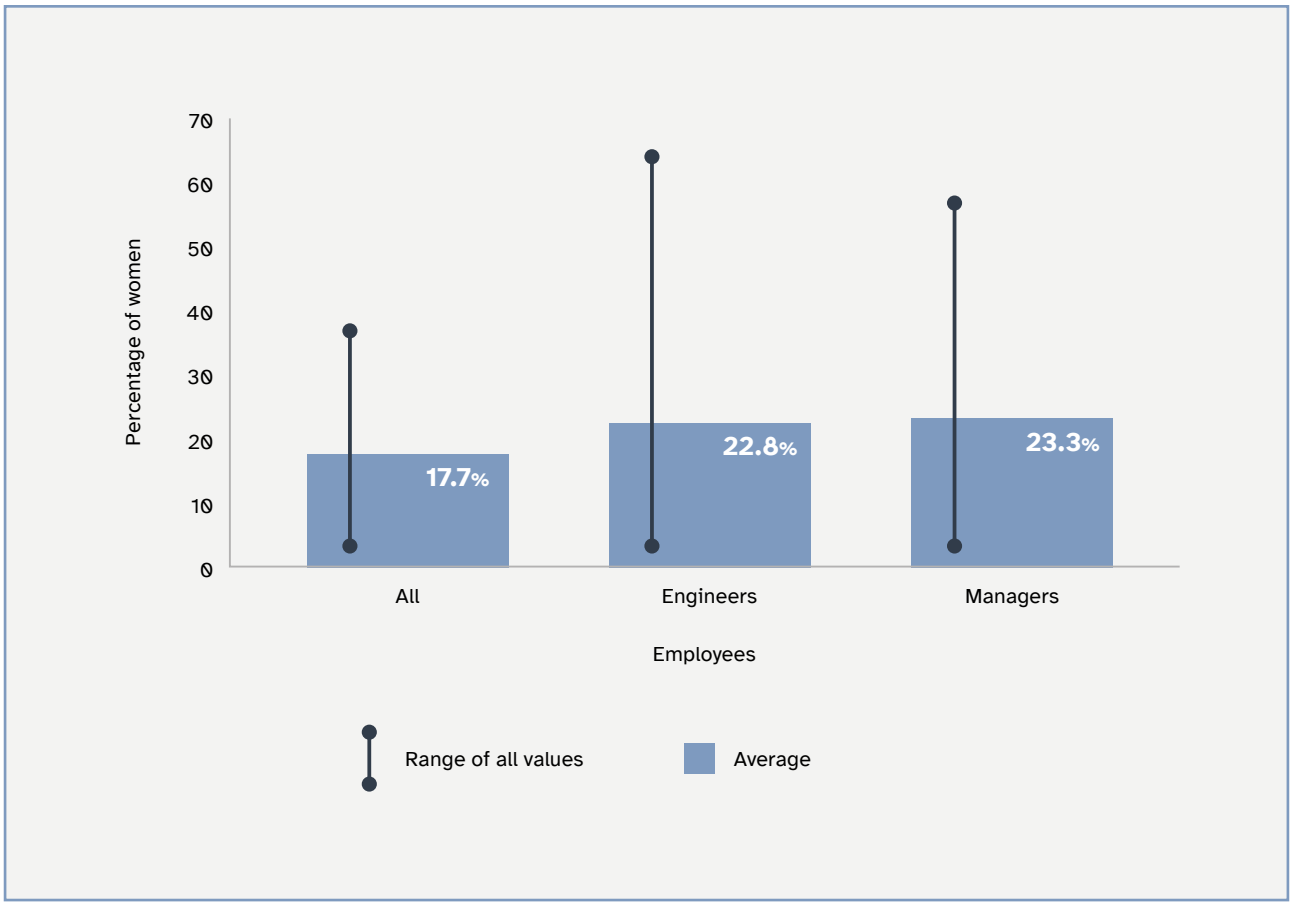
The connection between water and jobs is receiving increasing attention. Many jobs depend on water (Connor and Chaves Pacheco, 2024), and the water sector is struggling to attract, train and retain human resources in many parts of the world (Oluwasanya et al., 2024a; Mardiste et al., 2025). The latter is particularly true for women's participation, including in management and leadership positions.

According to a World Bank (2019) study, in the period 2018–2019, the share of women employees in water utilities at the global level was 17.7% (Figure 4.1). In general, the trend has been towards increasing women's participation. However, differences between organizations, localities and types of employment can be significant. While some water utilities have close to 40% of women employees, there are some entities and locations with no female staff. Of the companies sampled by the World Bank, 32% had no woman engineers, even if, in the water services sector, women appeared to be slightly better represented in management positions than in other sectors.

Countries such as Indonesia show it is possible to progress towards achieving gender equality in drinking water, sanitation and hygiene (WASH) sector employment, particularly in positions such as community sanitation and health work. However, progress seems difficult for senior roles, where challenges include ensuring a work–life balance with family responsibilities and bias against women in management positions (UNICEF, 2023). Government and corporate policies can fall short in addressing the distinct needs and contributions of women working or aspiring to work in the water services industry. Consequently, women are often under-represented in management and decision-making regarding water. One study identified 26 countries that placed restrictions on women working in various manual roles in the water sector (Jenniskens, 2022).

[12] The terms 'industry' and 'business' are frequently used analogously. For the purposes of this chapter, the terms are used as in the references cited. Business is a broad term that includes manufacturing, heavy and resources industries, as well as commerce and services, as used by the World Business Council for Sustainable Development, the Business Alliance for Water and Climate and the United Nations Guiding Principles on Business and Human Rights. Energy, while also an industry, is identified separately.

Figure 4.1 Share of women employed in water utilities at the global level, 2018–2019



Source: Adapted from World Bank (2019, fig. 2.1, p. 12).

4.2 Access to water resources for business

There is evidence (UNIDO, 2024) that companies which improved gender diversity in management were 46% more likely to reduce water use (FP Analytics, 2020). Nevertheless, there is also evidence from several countries that female entrepreneurs do not have the same access to source water as their male counterparts (ILO, 2019).

For the specific case of water-related businesses, a study in Cambodia found insufficient or irregular access to water resources year-round was among the main challenges faced by female entrepreneurs who set up businesses in the water services sector (Soeters et al., 2020). Conversely, a study in Indonesia about strengthening diversity among female WASH entrepreneurs did not point out differences in access to water resources (Kumar et al., 2021a). Rather, the emphasis was put on challenges related to access to the resources needed to develop and operate a business (e.g. finance, health, education, information, mobility and networks). Small and medium enterprises may be particularly affected, as they tend to have more women in management roles than men (ILO, 2019).

4.2.1 Access to energy for water

Access to energy is essential for water use in domestic and agricultural settings, especially where water pumping is required (Zwarteveen, 1997; FAO, 2014; 2016). While women have traditionally operated manual pumps, the shift to fuel- and solar-powered systems offers time-saving benefits (Sam and Todd, 2020). Women can be primary beneficiaries of such technologies, yet often face obstacles to accessing the energy and financing needed to use them.

In countries such as India and Senegal, solar water pumps have been used to improve access to energy and water (Agbejule et al., 2022; Bhaduri, 2024), although regulation is needed to prevent aquifer overuse and ensure effective water storage. In Tajikistan, large hydropower plants are used to generate cheap and clean electricity to operate pumped irrigation schemes for mountain agriculture, upon which the livelihoods of millions of rural inhabitants depend. However, to build reservoirs for hydropower plants, rural communities can be displaced, with a severe impact on people's livelihoods. More men than women tend to migrate from such areas to cities and abroad, leaving many women behind (ADB, 2020). In some contexts, small hydropower plants may provide a viable alternative to large ones (Box 4.1).

4.3 Access to drinking water, sanitation and hygiene services in the workplace

Primarily in low-income countries, progress on access to WASH at home is reducing the time spent fetching water, as well as improving health and providing several other benefits (see Chapter 2). These can contribute to enabling women to join the industrial workforce and engage in business activities. However, access to WASH in workplaces can be problematic.

WASH in workplaces is known to improve workforce productivity and health. For example, in Viet Nam, a survey showed an increase of 7.6% of profitability in workplaces where workers expressed greater satisfaction with water, air quality, restrooms, canteens and health services provided in the factory, holding other factors constant (ILO, 2016). However, sanitary facilities are still not always provided separately for men and women; often they are not fit for the specific needs of women, including menstruating, pregnant and lactating women.

There are limited data on how many workplaces have sufficient levels of WASH facilities and how often they are suitable for women. Several countries and organizations have adopted guidelines for the number of toilets for workers, differentiating requirements for men and women (Soriano et al., 2024). However, guidelines may not apply to smaller enterprises and may not fully consider the different requirements of men and women. Non-governmental organizations (NGOs) can play a key role in the development of such guidelines and in the promotion of inclusivity (Kumar et al., 2021b; Water for Women, 2022).

Box 4.1 Small hydropower plants for women's empowerment

Small hydropower plants can be a particularly suitable technology for remote and marginalized communities (UNIDO/ICSHP, 2022). They provide low-cost access to sustainable renewable energy and can therefore empower communities, improve livelihoods and be the basis for development opportunities. Disadvantages include the low capacity of some plants, which limits the power available for time-saving domestic appliances, and the poor governance of small hydropower development, which can threaten the natural resources critical for livelihoods.

By providing electricity and light, small hydropower plants can help to promote women's empowerment by reducing their 'time poverty' and domestic work, thus supporting education, income generation and improved quality of life. However, there are impediments to women's participation, such as the perception of small hydropower as a male-dominated technical domain, and administrative burdens like submitting legal documents or proving asset ownership, which women may lack. Considering women's and men's capabilities and needs should therefore be integrated into the design and implementation of such projects to ensure they contribute to women's empowerment and gender equality (GWNET, 2019).

4.4 Impacts of industrial water use

4.4.1 Pollution

The health and environmental impacts of industrial and mining-related water pollution can disproportionately affect women (Oluwasanya et al., 2024b). In some regions, contaminated water sources may result in women, children and older people being left behind as men migrate to urban areas or other countries (Xu and Famiglietti, 2023; Nanda and Ghosh, 2025). In addition, the effects of pollution can be tangible and far-reaching, whether or not its presence is known to the population, industry and authorities. Access to clean and safe water is a pressing issue. Those who remain in polluted areas must cope with the consequences daily.

While women have traditionally operated manual pumps, the shift to fuel- and solar-powered systems offers time-saving benefits

Industrial pollutants can severely compromise the quality of water available for people's needs, leading to a range of negative health outcomes. The burden of managing household water safety and the risks associated with contaminated water often falls heavily on women, amplifying existing disparities between women and men, and posing significant challenges to women's health and dignity. These disparities can intersect with other issues, multiplying the impacts for some women (Box 4.2).

Endocrine disrupting chemicals are a growing concern (OECD, 2023). They are pollutants, generally of industrial origin (e.g. certain plastics and pharmaceuticals), that can affect humans and animals, mostly through water, including drinking, underground and wastewater sources. These chemicals are particularly related to serious health issues for women, such as polycystic ovary syndrome, endometriosis and breast cancer, even at low concentrations (Thacharodi et al., 2023).

Box 4.2 Impact of industrial water pollution on Indigenous People in Canada

Grassy Narrows is a First Nation in northwest Ontario, Canada, on the Wabigoon–English river system that feeds Grassy Narrows Lake. A high percentage of its population work in fishing and consume fish regularly (Mergler et al., 2023). Between 1962 and 1970, an upstream paper mill dumped 9,000 kg of mercury (Hg) waste into the river, poisoning the lake and wildlife, and closing the commercial fishery (SDWF, n.d.).

In 1970, high levels of Hg being converted to the more toxic methylmercury were found in fish at levels almost 50 times those considered safe for human consumption. Government monitoring of blood and hair revealed high levels of pollution in members of the community. The amount of toxic methylmercury in the blood of pregnant women eating contaminated fish was about twice normal levels.

More than 90% of the adult population in Grassy Narrows have been born since the disaster, and were exposed to Hg in utero. There is evidence of the impact of Hg exposure over three generations (Mergler et al., 2023). From eating the local fish, almost 90% of children and adults have signs of mercury poisoning (Mergler et al., 2023), which can cause a range of debilitating health problems and psychological distress, including suicide (SDWF, n.d.).

4.4.2 Water scarcity

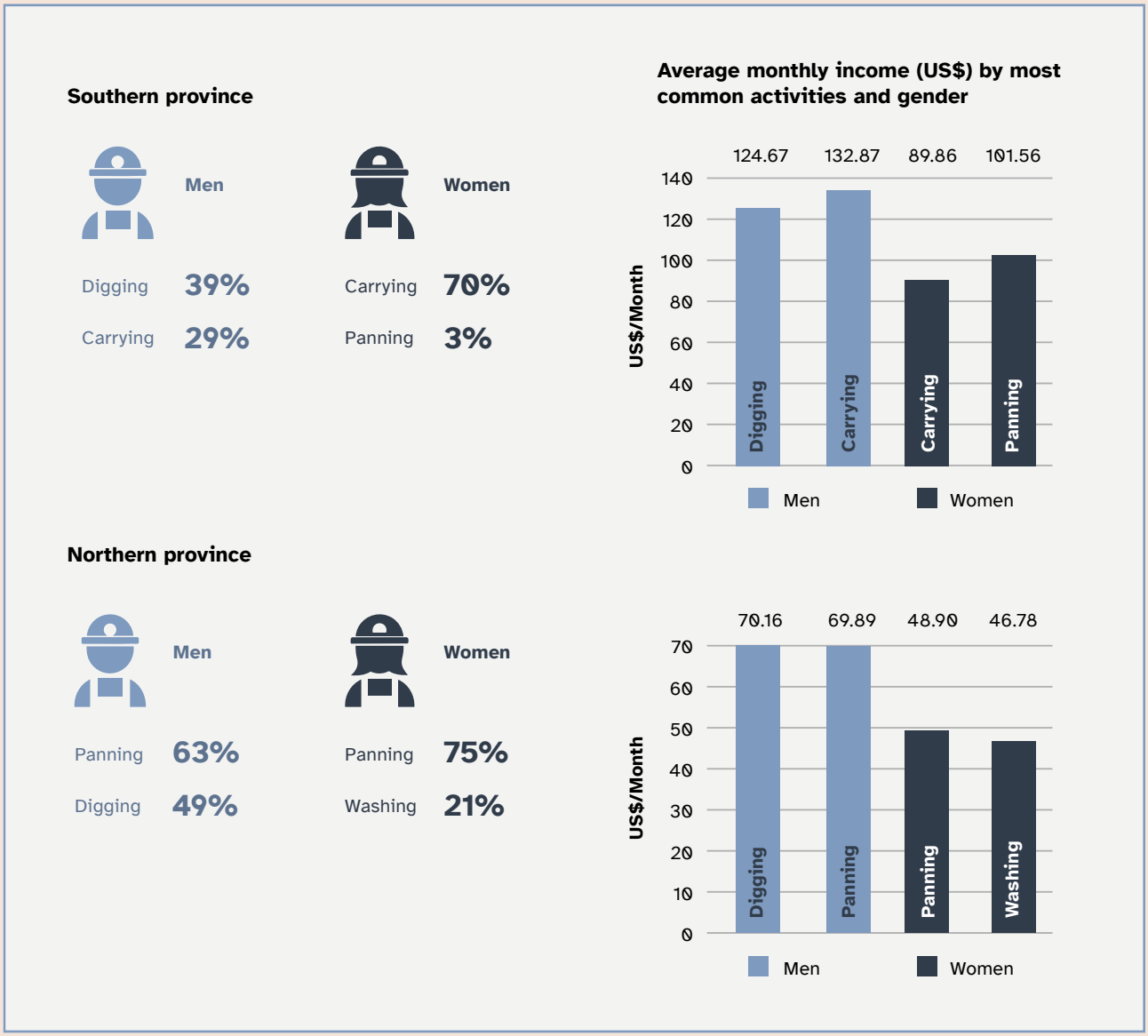
In regions where industrial water use results in scarcity – such as around textile industries and mining sites (Box 4.3) – and where women have traditionally borne the primary responsibility for collecting water, women may be forced to spend even more time and energy travelling greater distances to secure water for their households (GWP/UNEP-DHI, 2021). This time poverty increases the physical burden of women and also limits opportunities for women to engage in paid employment, participate in educational pursuits or contribute to other economic activities. This can further entrench cycles of inequality, as the everyday necessity of water collection overtakes other aspects of personal and community development.

Box 4.3 Artisanal and small-scale mining: Two sides of the coin

Approximately 44.7 million people are employed in artisanal and small-scale mining (ASM). Women comprise about 30% of this workforce (Delve, n.d.), but there is considerable regional variation, and it has been as high as 100% in some African countries (Hinton et al., 2003). Women can be engaged in different stages of mining activities (ILO, 2021) that often involve water, such as sluicing, panning and washing (Weldegiorgis et al., 2018). Nevertheless, there are pay gaps between men and women. For example, women doing the same activities earned 25–30% less than men in Rwanda in 2017 (see figure). In addition, women also provide essential goods and services – including water – to support mining communities.

However, much of the work women undertake, in family care and mining-related tasks, often remains unpaid and unrecognized (ILO, 2021). The impacts of ASM on water resources, as well as other environmental consequences, can disproportionately affect women, especially in rural areas, where women are typically responsible for sourcing water and food (IFC, 2018; ILO, 2019). The use of rudimentary mining methods often leads to pollution of nearby rivers, placing additional burdens on women, who are then forced to search for clean water at greater distances away. Moreover, women can be excluded from community consultations regarding mining activities, a challenge especially pronounced in Indigenous and tribal communities situated near ASM operations.

Artisanal and small-scale mining in Rwanda, 2017



Source: Based on ILO (2021, fig. 5, p. 35) and WIAMO/Carleton University/PAC/DRASPAC (2017).

Industrial projects that demand significant water resources (e.g. hydropower) can lead to the displacement of communities, with particularly acute impacts in developing countries. Often more reliant on local natural resources for household sustenance and small-scale economic activities (Bitzer et al., 2024), women are especially vulnerable to the negative consequences of displacement. They may lose access to vital resources, and may also be excluded from decision-making processes related to resettlement or compensation. This exclusion can lead to increased economic insecurity, loss of traditional livelihoods and heightened vulnerability to poverty and marginalization. The combined effects of displacement and scarcity of resources can reinforce existing disparities between women and men.

4.4.3 Improvements through technology

Industrial and energy uses of water through technological advances (e.g. better wastewater treatment) have brought improvements to the daily lives of many people. The provision of piped water supply to homes and central locations has lessened the time and physical effort many women and girls spend collecting water (see Chapter 2). Powered water pumps have reduced the reliance on manual hand pumps, which are labour intensive. Moreover, introducing household appliances has reduced time-consuming domestic tasks, allowing more time for education, employment and other activities.

Beyond the home, industrial development has made workplaces more accommodating and safer. Innovations such as flushing toilets, sanitation facilities and cleaning products contribute to workplace hygiene and comfort, which is vital in industrial settings where many women and men are employed (Bárcia de Mattos et al., 2022). These innovations additionally play a role in promoting gender equality in the workforce by creating environments that better support women's health, dignity and participation in economic activity.

4.5 Focus on selected industries

4.5.1 Textiles

Women play a significant role across the entire textile and garment value chain: from the production of raw materials to design, production and retail. In 2019, approximately 91 million workers globally were employed in the textile and garment sectors, more than half of whom were women. In garment manufacturing, women have been estimated to account for about 80% of employment (Bárcia de Mattos et al., 2022). However, working conditions are often poor, including poor WASH facilities. The rights to breaks to drink, urinate and wash may be limited if not inexistant to meet production and profitability targets.

The textile and garment industry can use large amounts of water for wet processing, which sometimes involves the use of toxic contaminants that pollute water and requires adhering to specific standards to reduce risks to workers, communities and the environment. Water can also be used for boiling, cooling or steaming purposes, as well as to clean machinery and facilities. The production of cotton and other raw materials used in the textile industry is a large user of water, including in water-scarce countries such as Egypt, Pakistan and Uzbekistan (Muthu, 2019).

4.5.2 Tourism

According to estimates from the International Labour Organization (ILO, 2023), tourism can contribute 2.5% of the gross domestic product globally, reaching to over 10% in some countries (El Achkar, 2023). Around 45% of employees in tourism are women, including female entrepreneurs (El Achkar, 2023). Women are particularly present in the food and beverage business and often in micro, small and medium enterprises.

Global direct water use for tourism was notably less than 1% in 2012, and is not likely to grow significantly (Gössling et al., 2012). Tourism can occur in areas with limited fresh water available (UN Tourism, 2023) and frequently in dry locations (Gössling et al., 2012). Conservation of water and management

of wastewater are important for sustainability, especially for local communities, where health issues may arise.

A literature review of the tourism–water nexus by Cole et al. (2020) pointed out that regions may have water challenges because of the competition between tourism and local communities, which could be exacerbated by climate change. It follows that the lives and caregiving roles of many women may be strongly affected by poor drinking water quality and bad sanitation in locations where tourism is significant in using water. The authors noted that gender has received little attention in the literature, but highlighted studies where women-led communities have opposed tourism investors in Spain, of privatization for tourism in Colombia and where women have become involved in conservation as professionals and environmental stewards in Mexico.

4.6 Responses

4.6.1 Business and industry responsibilities

Business and industry can promote gender equality in water use by championing policies and practices rooted in sustainability, equity and inclusivity. Company-level policies and investment are critical to ensure the unique needs of women are integrated into water management, sanitation and workplace health standards. Moreover, industry could invest in water-efficient technologies to reduce pollution and alleviate the burdens placed upon women outside the workplace. It could also engage with affected communities – particularly women – to ensure industrial water use does not undermine local water security. Transparent reporting further supports accountability, which remains a cornerstone for advancing women's participation in resources governance.

Beyond policies, industry can initiate training, promote women's leadership and invest in community water infrastructure (see Chapter 8). These actions may benefit all people and strengthen social and environmental outcomes. As part of corporate social responsibility, industry could fund initiatives that support women's access to water, education and livelihoods. This might include scholarships for women studying water management or investing in women-led water-based enterprises.

Business and industry can promote gender equality in water use by championing policies and practices rooted in sustainability, equity and inclusivity

Industry operating in rural and underserved areas could prioritize initiatives that address water insecurity, with a particular focus on the requirements of women in these communities. This includes investing in projects that ensure reliable access to safe drinking water, implementing irrigation systems to support farmers and developing sanitation and hygiene solutions tailored for women and girls. Collaboration with NGOs and governments, and alignment with international frameworks like the SDGs, can help to ensure industry efforts are globally informed and locally impactful. In this manner, industry could help to create a future in which water resources management (WRM) is sustainable and fair to everyone.

4.6.2 Society's role

Addressing gender inequality in water use requires a comprehensive approach, anchored in policy reform, community engagement and sustainable industrial practices. Inclusive governance, where women actively participate in water-related decision-making, can lead to more equitable, effective and sustainable outcomes in society and industry. Policies could prioritize women's participation in water-related decision-making, supported by gender impact assessments and accountability mechanisms. Mandatory investment in workplace infrastructure – providing safe and appropriate drinking water and sanitation – is important to achieve gender equality. Furthermore, strengthening and enforcing regulations on industrial water pollution, encouraging the

Photo: © BigPixel Photo/Shutterstock.com*

adoption of water-efficient technologies and supporting capacity-building initiatives for women in water-dependent sectors can collectively reduce negative impacts on communities and the environment (Coles and Wallace, 2005).

Collaborative action between governments, industries and communities could help to ensure equitable and sustainable WRM for all

Promoting women's empowerment economically and socially is also vital. This can be fostered by offering training, encouraging women's leadership in water governance and supporting women's participation in water-related entrepreneurship. Incorporating considerations about women into environmental and social impact assessments, and consulting with women in planning and advocating for legal frameworks that guarantee women's rights to water are critical steps towards more inclusive water governance. Collaborative action between governments, industries and communities could help to ensure equitable and sustainable WRM for all. Self-organization and women-led confrontation can also be part of the solution, as evidenced in the above-mentioned example of the tourism industry (Section 4.5.2).

4.6.3 Auditing

Gender audits can be effective tools for systematically evaluating the extent to which gender equality is embedded within organizations, programmes and sectors, including in industry, business and energy. These audits examine policies, workplace practices and leadership structures to identify inequities that may limit women's participation or where they may benefit from opportunities and resources. Such audits have been successfully applied in diverse contexts.

For instance, the United Nations Development Programme's Gender Equality Seal programme (UNDP, n.d.) and the International Labour Organization participatory gender audit methodology (ILO, 2012) help companies and organizations assess the balance between men and women in employment, leadership, remuneration and work–life policies, leading to measurable improvements. In the WASH sector, such audits assess the differential impacts of water use, pollution and governance on women and men, highlighting the need for targeted policies and interventions – particularly where industrial activities affect community access to WASH.

By exposing gaps and recommending actions, audits can help to drive the adoption of inclusive strategies – such as increasing women's representation in decision-making bodies, revising workplace infrastructure and sanitation, and supporting women's leadership development.

In water-intensive industries, such audits have led to initiatives that improve women's access to resources, technical training and participation in sector governance, whereas audits in infrastructure and energy projects have promoted more equitable compensation and resources allocation for women in affected communities. Gender audits can promote transparency, accountability and policy reform, helping to ensure women and men benefit equally from industrial development and resources management.

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Chapter 5

Climate change and hydrometeorological disasters

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Rising temperatures due to human-induced climate change – as well as changes in land use and water use – are accelerating changes in precipitation, evaporation, soil moisture, groundwater and streamflow (i.e. river discharge) patterns.

Climate change is also accelerating glacier melt and other cryospheric changes, increasing the risks of hazards such as glacial lake outburst floods while also affecting the availability and timing of water resources for downstream communities (United Nations, 2025). An increasingly erratic and unpredictable hydrological cycle (WMO, 2024; 2025) is posing more threats to human well-being (through its impact on provision of food and water security, economic stability, public health, etc.), and to environment and ecosystem health (see Chapter 6). Intensified occurrence and magnitude of hydrometeorological hazards highlight the urgent need for adaptive, resilient and integrated approaches to disaster risk management (DRM) strategies.

Extreme hydrometeorological phenomena primarily drive water-related hazards. Hydrometeorological disasters[13] can disproportionately affect women, girls and gender-diverse people due to systemic inequalities in access to resources, decision-making and services (Erman et al., 2021). Women may particularly face heightened risks to their livelihoods, rights, safety and health (especially menstrual health and hygiene) (Otto et al., 2017; Ngcamu, 2023; Parsons et al., 2025). Intersecting inequalities such as class, race, age and socio-economic status can often compound burdens (Otto et al., 2017; Thomas et al., 2019; Erman et al., 2021; UN Women, 2025). In addition, women and men may experience disaster risks differently due to gendered roles and capacities – worsening existing disparities (Erman et al., 2021; Walia and Sundarapandian, 2024). This can hinder equitable resilience outcomes across the four stages of DRM: mitigation, preparedness, response and recovery[14] (Thomas et al., 2019).

Transformative and just resilience to water-related weather and climate risks depends on applying a gender lens – rooted in sensitivity, responsiveness and inclusivity – into multisectoral frameworks that align disaster risk reduction (DRR), water resources planning, river basin management and climate adaptation. For example, hydrometeorological services (such as early warning systems (EWSs)) that are sensitive to disparities, responsive in intervention and inclusive in representation can help to ensure people of all genders are engaged, protected and empowered (Pudmenzky et al., 2022).

Women and men may experience disaster risks differently due to gendered roles and capacities

United Nations global policy frameworks like the Paris Agreement, the Sendai Framework for Disaster Risk Reduction 2015–2030 and the 2030 Agenda for Sustainable Development (and its 17 Sustainable Development Goals (SDGs)) call for bold inclusive climate action through SDG 5 (gender equality) and SDG 10 (reduced inequalities). Gender considerations are further supported by: the *Gender Action Plan to Support Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030* (UNDRR/UNFPA/UN Women, 2024), the Convention on the Elimination of All Forms of Discrimination against Women General Recommendation No. 37 on gender-related dimensions of DRR in a changing climate (CEDAW, 2018) and the agreed conclusions of the sixty-sixth session of the United Nations Commission on the Status of Women on achieving gender equality and the empowerment of all women and girls in the context of climate change, environmental and DRR policies and programmes (ECOSOC, 2022).

[13] Water-related extreme weather and climate events, including tropical cyclones (hurricanes and typhoons), severe thunderstorms, heavy rainfall, hailstorms, tornadoes, various types of floods (e.g. riverine, flash, urban and coastal), storm surges, landslides triggered by rain, droughts (meteorological, agricultural and hydrological), heatwaves, blizzards, snowstorms, glacial lake outburst floods, ice storms, frost events and avalanches.

[14] 'Disaster mitigation' refers to long-term risk and exposure; 'disaster preparedness' refers to readiness to act before a disaster strikes; 'disaster response' refers to immediate actions taken during/after a disaster; 'disaster recovery' refers to restoration and rebuilding after a disaster for long-term resilience.

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This chapter highlights how integrating gender perspectives into DRM practices can enhance community resilience, promote equality and drive development impact. The narrative is anchored in three key dimensions that underpin climate resilience to high-impact hydrometeorological events: gender-sensitive, gender-responsive and gender-transformative (see Section 1.3). While gender-sensitive efforts highlight disparities, gender-responsive and especially gender-transformative approaches address root causes and systemic inequalities, supporting more effective, equitable and sustainable disaster resilience and water management outcomes (FAO, 2016; IFRC, 2021; IFRC/UNICEF, 2021; UNDP/OCHA, 2021). Specifically:

- Gender-sensitive strategies recognize and document gender differences in exposure and vulnerability, but do not necessarily address underlying inequalities.

- Gender-responsive actions proactively address diverse needs, vulnerabilities and capacities by designing and implementing solutions tailored to these differences. Examples include gender-aware EWS, safe shelters that ensure privacy and meet hygiene requirements, and recovery programmes focused on gender-diverse people.

- Gender-transformative approaches transform systems to be equal and participatory for all genders. They ensure meaningful participation and leadership of diverse gender identities in policymaking, governance and community planning. This can help to address power imbalances, remove legal barriers and promote fair access to resources, protection and empowerment for all.

5.1 Gender and hydrometeorological disasters

Gender is a key structural determinant of disaster vulnerability. Tackling gendered inequalities is essential for inclusive DRM and for achieving equitable, sustainable development outcomes (Zaidi and Fordham, 2021). Hydrometeorological disasters can amplify existing systemic gender inequalities through multilayered effects – economic, social, health, educational and political (Erman et al., 2021). Table 5.1 summarizes gendered inequalities and impacts across the four DRM stages, along with their consequences on development outcomes.

Gendered disaster inequalities can result in disproportionate impacts on women, girls and gender-diverse people (Gaillard et al., 2017; UNFCCC, 2022; Cocina-Díaz et al., 2025). Such impacts include increased gender-based violence (GBV) and exclusion from recovery efforts. These dynamics may weaken disaster preparedness and delay recovery, thereby perpetuating gender inequalities and undermining human rights (Adger et al., 2014; UNDP, 2024). Ignoring gendered inequalities can affect humanitarian response and long-term development. Targeted, gender-responsive policies and gender-transformative actions in each DRM stage can help to achieve resilient sustainable development (Matikainen, 2023), especially in the context of SDG 6 and SDG 13. Improvement of development outcomes can depend on integration of gender considerations into disaster resilience efforts (Fordham, 2003; Zaidi and Fordham, 2021).

Table 5.1 Examples of gendered inequalities and impacts to hydrometeorological disasters from a water lens

DRM stage	Gendered inequalities	Gendered impacts	Effects on development outcomes
Mitigation	Exclusion from planning and decision-making processes.	Infrastructural design of shelters and other mitigation strategies may ignore gender-specific needs.	• Reduced effectiveness of DRM strategies. • Perpetuated gender inequality in planning and governance. • Weakened institutional trust.
	Unequal access to mitigation (adaptation) resources.	Structural inequalities limit access to land and financial resources.	
Preparedness	Limited access to training, education and resources needed for preparedness.	Less informed or equipped to act during emergencies.	• Limited resilience-building. • Increased mortality and injury risks. • Hampered gender equality in capacity-building. • Hindered timely and informed responses.
	Lower access to EWS (e.g. due to poor literacy or limited technology access), especially among women in rural areas.	Lower trust or comprehension of warnings.	
Response	Women less likely to evacuate due to caregiving roles or male household decisions.	Higher mortality rates among women.	• Undermined human rights and social protection efforts. • Exacerbated trauma (i.e. psychosocial distress) and health issues (including injury and mortality). • Slowed humanitarian effectiveness and inclusion. • Delayed recovery capacity.
	Gender roles prevent equal access to emergency services and safe shelters.	Limited access to relief aid.	
	Higher exposure to GBV, including sexual violence in shelters.	Increased GBV incidents.	
	Increased trafficking and exploitation risks during climate displacement.	Displaced persons experience lack of access to safe drinking water.	
	Mental and physical health burdens from loss of homes and personal belongings.	Lower participation in response actions such as emergency evacuation.	
Recovery	Unequal access to rebuilding support and financial compensation.	Women may be excluded from reconstruction benefits; unpaid domestic work increases.	• Limited livelihood restoration for women. • Disproportionately affected women's livelihoods and health (especially menstrual health and hygiene). • Increased economic dependency (of women). • Delayed long-term, inclusive economic and social recovery. • Hindered sustainable and equitable development.
	Women shoulder most post-disaster unpaid domestic work (e.g. restoring homes).	Girls are often removed from school to support domestic tasks.	
	Increased workloads during drought and food scarcity (e.g. walking long distances for water and standing in line).	Overall, more stress and poorer physical and mental health.	
	Greater health impacts: malnutrition, miscarriage and musculoskeletal disorders.	Poor menstrual health and hygiene due to limited or no access to clean water for sanitation.	
	Women may not have the same opportunities to migrate as men during drought.	Women are left with heavier farming burdens.	

Note: DRM: disaster risk management; EWS: early warning system(s); GBV: gender-based violence.

Source: Author.

5.2 Building disaster resilience from a gender lens: Hydrometeorological extremes

Equitable access to hydrometeorological services, reduced gender-based inequalities, stronger community resilience and enhanced participation in DRM practices can lead to sustainable water development and inclusive climate resilience.

Improvement of development outcomes can depend on integration of gender considerations into disaster resilience efforts

Although gender mainstreaming and DRM are broadly endorsed and there is now greater awareness of gender-related considerations in DRM, practical implementation – by National Disaster Management Authorities (NDMAs) and National Meteorological and Hydrological Services (NMHSs) – remains limited, partly due to insufficient guidance. Two landmark publications that responded to this need were *Making Disaster Risk Reduction Gender-Sensitive: Policy and Practical Guidelines* (UNISDR/UNDP/IUCN, 2009) and *Gender Sensitive Disaster Management: A Toolkit for Practitioners* (Pincha, 2008). They covered policy guidance and practical tools such as gender-sensitive risk assessments, EWS and monitoring indicators. Since then, many studies have reported the need for gender mainstreaming (Acciari et al., 2021; WMO/K&I, 2024), along with local and national case studies, for example: from eastern Africa (VFDM, 2021a; 2021b) to southern Africa (UN Women, 2024) to Pacific islands (UN Women, 2021a; UNDRR, 2023) to Asia and South America (Shrestha et al., 2014; Brown et al., 2019; UN Women, 2023). The content of these publications extends across a wide range of topics, from EWS to disaster response and recovery, as well as the development of policy and legislative frameworks. Yet, their scope is narrowly defined, focusing exclusively on women and girls, thereby excluding broader considerations of gender diversity (Gaillard et al., 2017; Cocina-Díaz et al., 2025) and the roles of gender-diverse individuals in achieving inclusive outcomes (Haworth et al., 2022; Sagala et al., 2024; Dominey-Howes et al., 2025).

In addressing hydrometeorological disasters, gender considerations differ across the four DRM stages. Table 5.2 illustrates how gender considerations could be integrated into strategies of mitigation, preparedness, response and recovery – through gender-sensitive, gender-responsive and gender-transformative approaches.

Mitigation efforts that incorporate gender considerations can help to build resilient infrastructure and inclusive policies that may reduce long-term risks and promote sustainable integrated water resources management (IWRM). During preparedness, inclusive approaches can enhance community capacity (e.g. design of safe shelters; Box 5.1), ensuring people can access timely warnings and take protective actions, thereby reducing disaster impacts. The United Nations Early Warnings for All initiative promotes the development of multi-hazard and inclusive EWS. 'Inclusive' explicitly includes gender considerations, ensuring everyone has equitable access to timely, understandable, and actionable warning information, and that their different needs, vulnerabilities and capacities are integrated throughout the early warning chain (WMO, n.d.). In the response phase, equitable and tailored interventions can help to protect vulnerable populations and uphold human rights, minimizing the immediate social and economic damage caused by disasters. Finally, recovery centred on inclusivity may foster social justice by empowering marginalized groups with equal access to resources, decision-making and livelihood restoration, laying the foundation for more resilient and equitable communities. Across all stages, integrating gender can transform DRM from reactive to proactive, with sustainable development that may benefit everyone.

Table 5.2 Examples of how to address gender considerations in disaster risk management

DRM stage	Gender-sensitive	Gender-responsive	Gender-transformative
Mitigation	**Flood risk mapping** Identify areas where women/girls are disproportionately exposed (e.g. near water-fetching paths). **Climate adaptation education** Provide basic hydrology and climate information tailored to rural women and girls, especially in areas with low literacy and limited access to information. **Gender-aware surveys** Conduct gender-aware surveys to identify preferred language and communication channels for dissemination of early warning information (e.g. mobile alerts, community meetings, radio).	**Infrastructure planning** Design and plan evacuation routes and shelters with active consideration of gendered priorities and needs, ensuring safety, accessibility, hygiene and dignity for women, girls and people marginalized due to gender. **Water infrastructure** Design and construct climate-resilient water infrastructure that addresses the needs of women and girls for safe, nearby water access. **Customized weather services** Create localized agrometeorological advisories that incorporate input from all genders, providing tailored guidance on irrigation planning and planting timelines aligned with their specific farming practices and market needs.	**River basin management** Ensure diverse gender representation in basin-wide mitigation strategies (e.g. land zoning and afforestation). **Inclusive policymaking** Engage women, marginalized genders and Indigenous knowledge holders in national DRM policies and climate adaptation planning through inclusive, multistakeholder platforms. **Digital equality** Promote digital equality in hydrometeorological services by providing phones, training and data subsidies to all genders in remote communities, ensuring equal access to forecasting apps and early warning tools.
Preparedness	**Sex-disaggregated data collection** Track differential vulnerabilities (e.g. mobility or shelter access) across genders. **Gender analysis** Identify the differences in the roles, status and access to resources, opportunities, constraints and power among women and girls, men and boys, and people of diverse genders. **Risk awareness campaigns and policy documents** Promote the use of non-sexist language in risk awareness campaigns and in disaster climate policy documents.	**Tailored EWS** Deliver early warnings through gender-preferred and accessible channels – such as SMS, radio, community centres – using tailored messages that account for differences in mobility, literacy and access across genders. **Gendered training programmes** Conduct simulation drills that accommodate caregiving responsibilities and varying mobility needs.	**EWS co-design** Engage women, men, gender-diverse people and persons with disabilities in the design of alert systems and communication protocols. Include women, men, gender-diverse people and Indigenous communities in the design and testing of EWS to ensure all voices shape risk communication methods and formats. **Community preparedness** Establish community disaster preparedness committees that ensure gender diversity through quotas or inclusive participation policies and support leadership development for under-represented genders with training and mentoring. **Inclusive local knowledge-sharing** Incorporate traditional practices from women, men and Indigenous groups into preparedness plans.

Table 5.2 Examples of how to address gender considerations in disaster risk management (continued)

DRM stage	Gender-sensitive	Gender-responsive	Gender-transformative
Response	**Post-disaster damage assessment** Collect data disaggregated by sex and household type, recording impacts separately for male- and female-headed households. **Aid distribution** Record aid received by male- and female-headed households and other (demographic) groups.	**Safe shelters** Ensure gender-segregated and safe spaces, and access to menstrual hygiene kits and gender-affirming supplies. **Emergency sanitation** Install latrines considering women's safety, menstrual needs and persons with disabilities. **Funding integrity** Suppress the misappropriation or misuse of funds – often driven by the urgency of emergency situations and irregular financing or procurement practices – which can significantly undermine response efforts, with particularly harmful impacts on women and girls. **Gender-responsive complaint mechanisms** Set up anonymous feedback systems accessible to everyone.	**Non-discrimination in aid** Ensure equal access to food, water and health services for women, men, gender-diverse people and people with disabilities. **Diverse emergency response teams** Employ responders from diverse genders to improve trust and responsiveness. **Protection from GBV** Implement protocols for prevention and redress in shelters and camps.
Recovery	**Impact evaluation** Assess how recovery programmes affect men versus women versus gender-diverse households. **Rehabilitation needs mapping** Recognize differential water, shelter and health needs post-flood for various genders. **Data reporting** Track female- versus male-led business recovery.	**Targeted livelihood support** Provide recovery support tailored to women, single mothers, widows, transgender people and informal workers, addressing obstacles to credit and land access. **Capacity-building programmes** Offer vocational training and upskilling to women and gender minorities to restore income streams. **Monitoring equality outcomes** Conduct regular gender audits of recovery projects and public reporting of who benefited.	**Funding integrity and inclusive recovery funds** Ensure equitable and transparent access to grants, microloans and compensation for all gender identities through inclusive and fair practices. **Governance and decision-making** Ensure equal gender representation in local reconstruction committees and water resources planning boards. **Legal reforms** Adopt gender recognition laws (including land and property), to ensure equal access to recovery resources and land titles regardless of gender identity.

Note: 'Gender considerations' in this table includes diverse gender identities and roles, systemic inequalities and development outcomes.

DRM: disaster risk management; EWS: early warning system(s); GBV: gender-based violence; SMS: short message service.

Source: Author.

Box 5.1 Making cyclone shelters safer for women and girls in Bangladesh

In coastal Bangladesh, cyclone shelters help to save lives during storms. However, many shelters are not safe or comfortable for women, girls and other vulnerable people. Often, men and women must stay together in crowded spaces, with no separate rooms or toilets. This creates risks of harassment and health problems, especially for women during menstruation or pregnancy. Some women and girls therefore avoid going to shelters.

Poor roads and long distances make it even harder for elderly people, pregnant women or people with disabilities to reach safety. In many families, women also feel pressure to stay at home during disasters, which often puts them in more danger.

Better design of cyclone shelters would improve safety and dignity. This could include incorporating separate areas for women, safe and clean toilets, proper lighting and easier access for those with mobility challenges. It is also important to involve women in planning and managing shelters, so their needs are fully considered. Better, safer shelters mean more people can reach safety in time – and recover faster after a storm.

Sources: Faruk et al. (2018); Ayeb-Karlsson (2020a; 2020b); UN Women (2023).

The sharing of DRM case studies supported by formal evidence reported in scientific literature is progressing (Dube and Mhembwe, 2019; Kadir, 2021; Kaya et al., 2025). However, many good practices remain in grey literature as they often emerge from practical development projects (Brown et al., 2019; WMO/K&I, 2024). Further gender-sensitive research could aid understanding of how gender influences people's experiences of floods, droughts and other climate-related hazards (e.g. how women may face greater impediments than men in accessing early warnings or recovery resources). Such research could guide the development of disaster and climate policies, which can better protect and empower everyone (Dominelli, 2024).

The diversity of DRM case studies shows there is no one-size-fits-all solution. A thorough analysis is required to understand national, cultural and regional sensitivities, which might differ from developed to developing countries (Prakash et al., 2024; Kaya et al., 2025). Gendered approaches should consider the contextual diversity as defined by historical disparities, cultural sensitivities, institutional maturity and community dynamics.

5.3 Indicators, tools and frameworks

Governments, donors, civil society and implementing agencies should move from gender-blind or gender-sensitive to fully gender-responsive and inclusive DRM. This requires design of gender-transformative DRM policies and practices. A critical first step is the systematic collection and reporting of sex-disaggregated data (see Chapter 8) on vulnerabilities and impacts (GFDRR, 2018; Kadir, 2021). Understanding how gender affects exposure, access to resources, needs and responses to hydrometeorological disasters is essential (GFDRR, 2018; Dube and Mhembwe, 2019). It lays the groundwork for designing DRM interventions and also for formulating climate adaptation strategies – within national adaptation plans (NAPs) – that are targeted, equitable and inclusive.

The lack of sex-disaggregated data can undermine the ability of policymakers to craft interventions that support women, girls and gender-diverse people in adapting to climate change (Awiti, 2022; Onyango et al., 2023) and its impacts on availability of water resources. The development of clear indicators and robust frameworks to guide data-driven action can help to address the lack of data. Box 5.2 presents examples of data, information and indicators that could be used – from simple to more advanced – tailored to varying levels of readiness.

Box 5.2 Examples of data, information and indicators

- Number of women and men trained in disaster preparedness.
- Percentage of staff in National Meteorological and Hydrological Services trained in gender-responsive communication.
- Percentage reduction in casualties from hydrometeorological disasters.
- Availability of sex-disaggregated data in risk assessments.
- Percentage of shelters with sex-segregated and inclusive facilities.
- Percentage of disaster preparedness plans that include women and men in all their diversity.
- Percentage of early warnings received and understood by women, men and gender-diverse people.
- Number of disaster risk reduction communication materials adapted for different gender needs and literacy levels.
- Number of outreach strategies adapted to reach non-digital users (e.g. through door-to-door approaches or via radio communication).
- Availability of sex-disaggregated data in disaster risk management project monitoring reports.
- Inclusion of feedback from gender-diverse users in early warning system design.

Knowing which data and indicators to collect and report is essential, but not sufficient. It is equally important to understand the methods and approaches for collecting such data. Traditional techniques include surveys and questionnaires, focus group discussions and key informant interviews. A combination of participatory methods, surveys, administrative data and qualitative tools could be used to capture diverse experiences. When using gender-sensitive questionnaires, it is important to train the interviewers on gender issues and ethics to build trust and ensure accurate data collection (Kaya et al., 2025). Respecting privacy and confidentiality is imperative, especially when handling sensitive information.

Keeping track of gender-specific outcomes and outputs is a crucial aspect in DRM projects. It is best to disaggregate project-related indicators by sex (e.g. the number of people trained, access to resources or participation rates). Several exemplary tools and frameworks aid this purpose. For instance, the *Training Manual on Gender and Climate Resilience* (UN Women, 2021b) has a detailed outline of useful tools for gender mainstreaming in climate change and DRM. Another is the *UNESCO WWAP Toolkit on Sex-Disaggregated Water Data* (Miletto et al., 2019). Other notable examples include the framework by the Climate Risk and Early Warning Systems initiative and the Gender Action Learning System methodology (IFAD, 2022). Although some of these are not specifically DRM oriented, they offer a road map for operationalizing the shift to gender-responsive DRM.

Mainstreaming gender into EWS and integrated flood management has received considerable attention. For example, a training manual and a facilitator guide (WMO/K&I, 2024) offer practical guidance on mainstreaming gender through gender-responsive planning, budgeting, and monitoring and evaluation within the project development processes. Such manuals and guidelines are important. Design and implementation of gender-transformative approaches need structure and mandates across all organizations, from NMHSs and NDMAs to non-governmental organizations (NGOs).

Looking ahead, several key priorities could guide the systematic collection and use of sex-disaggregated data:

- This task could be mandated across all types of disasters to ensure comprehensive and inclusive risk analysis.
- Gender indicators that are cross-sectoral could be used to reflect the interconnected nature of vulnerabilities and responses.
- Integrating intersectional dimensions (e.g. age, disability and ethnicity) may enhance the equity, relevance and effectiveness of disaster vulnerability assessments and resilience planning, ultimately leading to more just and responsive DRM systems.
- Establishing robust accountability mechanisms and anti-corruption controls can aid the effectiveness and long-term sustainability of gender-transformative initiatives. Many such efforts remain ad hoc or symbolic, lacking the depth required for systemic change. A sustained and institutionalized approach to measuring and monitoring of gender-related actions and commitments – across policy, programming and implementation levels – may be necessary to assess impact, ensure compliance and guide improvement (Cigala et al., 2022).

It is important this work is carried out with sensitivity to national, institutional and cultural contexts. As Prakash et al. (2024) suggests this could begin with a thorough analysis that includes: (a) assessing the use of gender-related terms and language, (b) identifying embedded biases and stereotypes, (c) evaluating how gender issues are represented, (d) reviewing the overall level of gender sensitivity and (e) highlighting the portrayal of gender roles and responsibilities.

5.4 Conclusions

Achieving water and climate resilience amid increasingly extreme hydrometeorological disasters demands more than technical solutions. It requires integrating a clear understanding of gender dynamics to effectively promote equality in the ways people deal with disasters.

Better understanding of the gender dimension of water and climate change could help to achieve gender equality in DRR and disaster recovery (SIWI/AGWA, 2017). Women's leadership in disaster governance and the delivery of hydrometeorological services may help to build community resilience (Dogulu et al., 2024; UNDRR/WMO, 2024; Walia and Sundarapandian, 2024).

Systems that are gender-responsive and gender-transformative can foster meaningful and lasting disaster resilience

It is also time gender strategies started going beyond a focus on women and girls to also include gender-diverse people. The talents, energy and skills of all genders are often underused assets for the support of climate action, and could be harnessed universally across geographies and institutional contexts.

Systems that are gender-responsive and gender-transformative can foster meaningful and lasting disaster resilience. Integrating gender across the stages of DRM and climate adaptation is especially critical to water-centric sectors,[15] which are highly sensitive to water availability, distribution and governance. Such integration can enhance the effectiveness, legitimacy and long-term sustainability of policies and interventions. Furthermore, this integration could be supported by cross-sector collaboration among governments, NGOs, communities

[15] Examples include urban planning and infrastructure, water supply and sanitation, agriculture and irrigation, energy, health, environment and ecosystem services.

and donors. In doing so, alignment with national climate plans (e.g. NAPs), climate financing mechanisms and SDG commitments could be prioritized.

Box 5.3 presents the key objectives from the *Gender Action Plan to Support Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030* (UNDRR/UNFPA/UN Women, 2024).

Governments should consider the following preliminary practical steps, listed in order from simpler to more demanding:

- Establish gender focal points in relevant ministries (e.g. environment, water, disaster management and climate change) and provide commensurate budget to implement actions (see Chapter 9).
- Design training courses on mainstreaming gender for NMHSs and NDMAs.
- Mandate sex-disaggregated data collection (across sectoral assessments relevant to hydrometeorological disasters).
- Promote gender-sensitive research to form the evidence base for design of gender-transformative strategies (Dominelli, 2024).
- Institutionalize gender accountability across all levels (national, regional and local) and within relevant organizations (e.g. NMHSs, NDMAs and NGOs).
- Embed substantive gender equality mandates in national DRM, IWRM and climate policies (NAPs and nationally determined contributions; Duncanson et al., 2022), in alignment with national gender action plans.
- Finance and monitor inclusive disaster infrastructure and disaster governance, with a focus on hydrometeorological services delivery.

A truly climate-resilient future – one that is inclusive and equitable – can be achieved only through deliberate, collaborative and sustained efforts across all sectors and levels of governance.

Box 5.3 Key gender equality objectives from the *Sendai Gender Action Plan to Support Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030*

1. Increase the availability of sex, age, income and disability disaggregated data and qualitative information on gender and disaster risk.
2. Use gender analysis to generate and apply disaster risk knowledge in decision-making.
3. Mainstream gender equality across laws, policies, strategies, plans and institutions for disaster risk reduction, informed by relevant international treaties and agreements.
4. Increase meaningful participation and empowerment of women and gender stakeholders in disaster risk governance.
5. Mainstream gender equality criteria into risk-informed development and disaster risk reduction investments.
6. Increase funding allocations and improve access to financing for disaster risk reduction initiatives that advance gender equality.
7. Implement gender-responsive and inclusive end-to-end multi-hazard early warning systems and anticipatory action.
8. Plan for and invest in gender-responsive disaster recovery, rehabilitation and reconstruction.
9. Ensure access to sexual and reproductive health and reproductive rights, and prevention and response to gender-based violence in the context of disasters.

Source: UNDRR/UNFPA/UN Women (2024).

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Chapter 6

Ecosystems

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Ecosystems provide essential goods, services and functions related to the availability, quality and management of freshwater resources. Climate change (see Chapter 5), unsustainable land-use change and pollution are significantly affecting aquatic and water-dependent ecosystems, leading to losses of ecological goods, services and biodiversity. Ecosystem degradation that disproportionally affects women's health and livelihoods can deepen gender and societal inequalities.

Ecosystem degradation that disproportionally affects women's health and livelihoods can deepen gender and societal inequalities

Across cultures and communities, women have been involved in safeguarding and managing ecosystems for centuries – developing and transmitting local and traditional knowledge from generation to generation. Ensuring women have equal access to ecosystem services and are involved in ecosystem management can help reduce gender inequalities, contributing to more equal and resilient communities.

6.1 Ecosystem degradation

Aquatic ecosystems – such as lakes, rivers, streams, wetlands and coastal estuaries – provide vital services ranging from water supply, storage and natural purification through to flood control, recreation and waterway transport. They also provide habitats for aquatic and terrestrial species and sustain a rich biodiversity of fauna and flora of significant ecological, cultural and economic values. These ecosystems are interconnected through the flow of water across landscapes, from rainfall and runoff to infiltration and discharge, forming part of a dynamic system that links surface water, groundwater and terrestrial ecosystems. The preservation of environmental flows is essential for ensuring the health of aquatic ecosystems, which directly influences the quantity and quality of surface water and groundwater.

Degradation of aquatic ecosystems can cause loss of biodiversity and ecosystem services, contributing to water scarcity and quality deterioration. It may also decrease the resilience of ecosystems and communities to climate change.

About 40% of the world's plant and animal species depend on wetlands, including 30% of all known fish species. An estimated 35% of the world's wetlands have disappeared since the 1970s, and those that remain are vanishing three times faster than forests. Drivers of wetland loss include climate change, widespread drainage and infilling for agriculture and construction, pollution, overexploitation of resources (e.g. overfishing) and invasive species (Ramsar Convention, 2021).

The main drivers of aquatic ecosystem degradation and biodiversity loss include climate change, land-use change and pollution (IPBES, 2018). Analysing these complex linkages through the lens of gender equality can aid better understanding of their specific and often disproportionate impacts on women and men and highlight the various roles men and women play in water and ecosystem management, while contributing to gender equality.

Groundwater resources sustain a variety of ecosystems such as wetlands, peatlands, springs and estuaries, as well as numerous plant and animal species. The ecosystem services they provide include water storage and supply, flood and drought buffering, pollutant filtration, habitat provision, biodiversity support and cultural value. Over-extraction lowers water tables, causing ecosystems like wetlands and springs to dry up and affecting river flows. Many land-based ecosystems also depend on groundwater and could be threatened by groundwater abstraction (Link et al., 2023). For example, approximately 60% of groundwater-dependent ecosystems coexist with pastoral lands (Rohde et al., 2024). Pollution, from sources like agriculture and industry, contaminates groundwater, which then harms aquatic biota and degrades the quality of connected surface water bodies (United Nations, 2022).

6.2 Gender-related impacts of ecosystem degradation

Many people, particularly those in rural communities and Indigenous Peoples, directly depend on vital ecosystem services such as provision of food, water, fuelwood, medicinal plants and other natural resources (Kiørboe et al., 2005; Meinzen-Dick et al., 2025). As such, the effects of ecosystem degradation on water resources can exacerbate gender-based inequalities. For example, declines in available water due to degraded freshwater ecosystems can increase the time and efforts of women and girls, who often bear primary responsibility for collecting water when it is not available on premises (UNEP, 2024; see Chapter 2). Ecosystem degradation can affect people's health and nutrition, for example by reducing access to medicinal plants or native food sources. This can also have significant gender implications, especially where women and girls bear a disproportionate share of caregiving responsibilities and are primarily responsible for food preparation.

A decline in available ecosystem services can also hinder people's opportunities for income-generating activities – especially for those engaged in agriculture – thus reducing household income (Midler, 2022). Increased exposure to water-related disasters and health hazards (including those caused by water pollution) is another important consequence of ecosystem degradation, often disproportionately affecting women and girls in underprivileged social and economic roles.

At the community level, social and political power dynamics can play a significant role in determining resources use and access, and their economic benefits, especially where access to common lands or resources is restricted based on gender-based discrimination rooted in sociocultural norms (see Chapter 9). For example, in West Bengal, women in low social strata may be particularly disadvantaged due to societal and cultural beliefs when ecosystem degradation affects the availability of such resources (Chowdhury and Behara, 2021).

Gaps in data and research inhibit a comprehensive analysis of the gender-differentiated impacts of water resources and ecosystem degradation. Literature primarily focuses on gendered impacts of inadequate access to drinking water, sanitation and hygiene and the effects of women's participation in water allocation and management decisions (Crider and Ray, 2022). Research often overlooks the impacts of broader ecosystem degradation issues on women, and on gender differences in use, valuing and management of ecosystem services. Such data and analysis are crucial for better understanding of the gender-differentiated ecosystem uses and ecosystem degradation impacts, providing key information for the prioritization of ecosystem management and conservation programmes that support women's empowerment and reduce inequalities.

6.3 Mainstreaming gender equality into ecosystem management

Approaches that understand and address gender gaps in water and ecosystem management can contribute to reducing societal inequalities between women and men, while at the same time enhancing climate change adaptation and improving ecosystem health and resilience. Therefore, it is essential to mainstream gender equality into ecosystem management at all levels – from policies and management practices to water research and education.

Declines in available water due to degraded freshwater ecosystems can increase the time and efforts of women and girls, who often bear primary responsibility for collecting water when it is not available on premises

In 2018, contracting Parties to the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention) adopted Resolution XIII.18 on gender and wetlands. This was

the first resolution to explicitly recognize the importance of gender equality and women's empowerment in the implementation of the Convention (Ramsar Convention, 2018).

Water resources and ecosystem management, when designed and implemented by considering social dimensions and gender-based differences, can bring multiple co-benefits that may collectively contribute to gender equality.

6.3.1 Nature-based solutions

Practical applications of nature-based solutions related to water resources management – such as reforestation, rainwater harvesting and rehabilitation of wetlands – have, for example, successfully revitalized local springs, enhancing water access and ecological resilience while providing economic opportunities (Tejada and MacGillivray, 2022; Sharma et al., 2024). Additional co-benefits from nature-based solutions can include reduced public health risks and enhanced economic development and sustainable livelihoods (WWAP/UN-Water, 2018). These potentially contribute to reducing social inequalities affecting women and disadvantaged groups, especially in rural areas and communities.

Payment for ecosystem services schemes may provide financial mechanisms for the restoration and protection of ecosystem services within watersheds. These could benefit downstream users by ensuring the provision and sustainability of essential ecosystem services such as water availability and quality, while offering economic incentives to upstream stakeholders. Conducting diagnostic gender analyses before design and implementation is essential to understand exactly **who** receives the benefits from these schemes and **how** the distribution of these payments is decided.

6.3.2 Human-rights-based approaches

Ecosystem services are essential for fulfilling several human rights, such as those related to water, food, health and a clean environment, and the right of Indigenous Peoples to natural resources. Human-rights-based approaches to water and ecosystem management may therefore contribute to improving people's access to water and natural resources, land and ecosystem services, resulting in improved health and livelihood opportunities, including for people in a situation of vulnerability. In addition, gender-differentiated impact analysis and assessments (see Chapter 8) can provide crucial information for financing water-related ecosystem management and technical incentives for communities.

6.3.3 Integration of Indigenous and local knowledge

The inclusion of traditional, Indigenous and local knowledge in water and ecosystem management is vital for local leadership and community-based water and ecosystem restoration and management approaches (Box 6.1). Indigenous Peoples hold valuable knowledge for the sustainable stewardship of nature (Burgos-Ayala et al., 2020), including traditional water and ecosystem use and management practices.

6.4 Conclusions

A comprehensive gender equality approach to address the challenges related to water and ecosystem degradation is essential for ensuring equitable and sustainable solutions. This may be achieved by: gender mainstreaming in water and ecosystem management; overcoming research and information gaps through gender-differentiated impact assessments and sex-disaggregated data; and promoting the empowerment of women through their equal and meaningful participation in water and ecosystem management and decision-making.

Adopting gendered approaches can foster more inclusive, resilient and innovative strategies to manage water-related ecosystems, by addressing the specific realities of women and girls. While women may bear a disproportionate burden of ecosystem degradation due to gendered roles, limited access to water and natural resources, and social inequalities, they fulfil active roles as community members and leaders who hold important knowledge that can contribute to resilient, productive and sustainable communities.

Box 6.1 Indigenous Peoples' role in safeguarding ecosystems and freshwater resources

Indigenous Peoples' territories contain aquatic and terrestrial ecosystems, including headwaters, globally significant wetlands, 'water towers' and large-scale pastoral rangelands (Garnett et al., 2018). However, little is known about the collective contribution of Indigenous Peoples' territories to the global hydrological cycle, despite their potential contributions to atmospheric moisture flows, aquifer recharge and baseline flow in transboundary and national basins. This lack of baseline knowledge has led to an undervaluation of the significance of Indigenous Peoples' territories in international policy dialogues (Rockström et al., 2024).

In many Indigenous societies, women are primarily responsible for water collection, household use and sanitation, making them key managers of water at the domestic and community levels (Sorenson et al., 2011; UN Women, 2023). Indigenous women are key holders of traditional knowledge related to water systems, including purification, conservation and seasonal behaviours, but this knowledge has often been overlooked in water governance systems (McGregor, 2012). Water governance systems are often male dominated, omitting women from decision-making processes. Mechanisms that proactively and consistently channel Indigenous Peoples' perspectives and cultural values, including those held by women, are required at the local level as well as in global water policy discourse.

Source: Maggie White (Stockholm International Water Institute).

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Chapter 7

Regional perspectives

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7.1 Sub-Saharan Africa

Water is at the centre of economic development, social cohesion and environmental sustainability in Africa, supporting various sectors such as domestic use, agriculture, construction and industry. In 2021, 79% of Africa's fresh water went towards the agriculture sector (FAO, n.d.a), which employs over 45% of African workers and is heavily dependent on rainfall and groundwater (FAO, 2025). Water is also a key catalyst in industrial development as a raw resource and for operations like cooling and cleaning.

An estimated 1.8 billion people were expected to be living in regions with absolute water scarcity[16] by 2025 (FAO, n.d.b). Chad, Niger and Somalia were reported to be the least water-secure countries in Africa in 2022 (UNU-INWEH, 2022).

In Sub-Saharan Africa, access to clean and safe water remains a significant challenge, with access to basic water services estimated at 58% in 2024, and access to basic sanitation estimated at 47% (WHO/UNICEF, 2024). Approximately 115 people in Africa die every hour from diseases linked to poor sanitation, poor hygiene and contaminated water (WHO, n.d.).

In many Sub-Saharan countries, women and girls have primary responsibility for fetching water compared to men in rural households

Africa has some of the world's most water-scarce regions. The burden of water collection and management disproportionately falls on women and girls. Inequalities persist in water rights for men and women, as disparities in access, distribution, collection and quality prevail. Regional disparities, governance limitations and cross-sectoral siloing continue to hinder integration of World Economic Forum policies and associated investments.

7.1.1 Trends, emerging issues, opportunities and challenges

Gender disparities and access to water

In many Sub-Saharan countries, women and girls have primary responsibility for fetching water compared to men in rural households where water has to be collected. For example, in South Sudan, 90% of the rural household members who fetch water are women and girls, 84% in Malawi and Mozambique, 81% in Burkina Faso, 78% in Burundi and 76% in Central African Republic (World Bank, 2024; Figure 7.1). Women and girls are often forced to give up or shorten other important activities (see Chapter 2) such as education and paying work to make time for this (Libanda et al., 2024). They may also be exposed to sexual harassment and assault along remote routes and at congested water points (Tallman et al., 2023).

It has been estimated that providing access to basic water services could save women the equivalent of 77 million working days per year (WaterAid, 2023). This is particularly pronounced in the 80% of rural households where water sources are distant (UNICEF/WHO, 2019). Because of the emotional, physical and time burden associated with water collection, women may choose to restrict their own water consumption, including for food, drink and personal hygiene purposes, in order to prioritize the needs of their children and spouses (Nounkeu and Dharod, 2022).

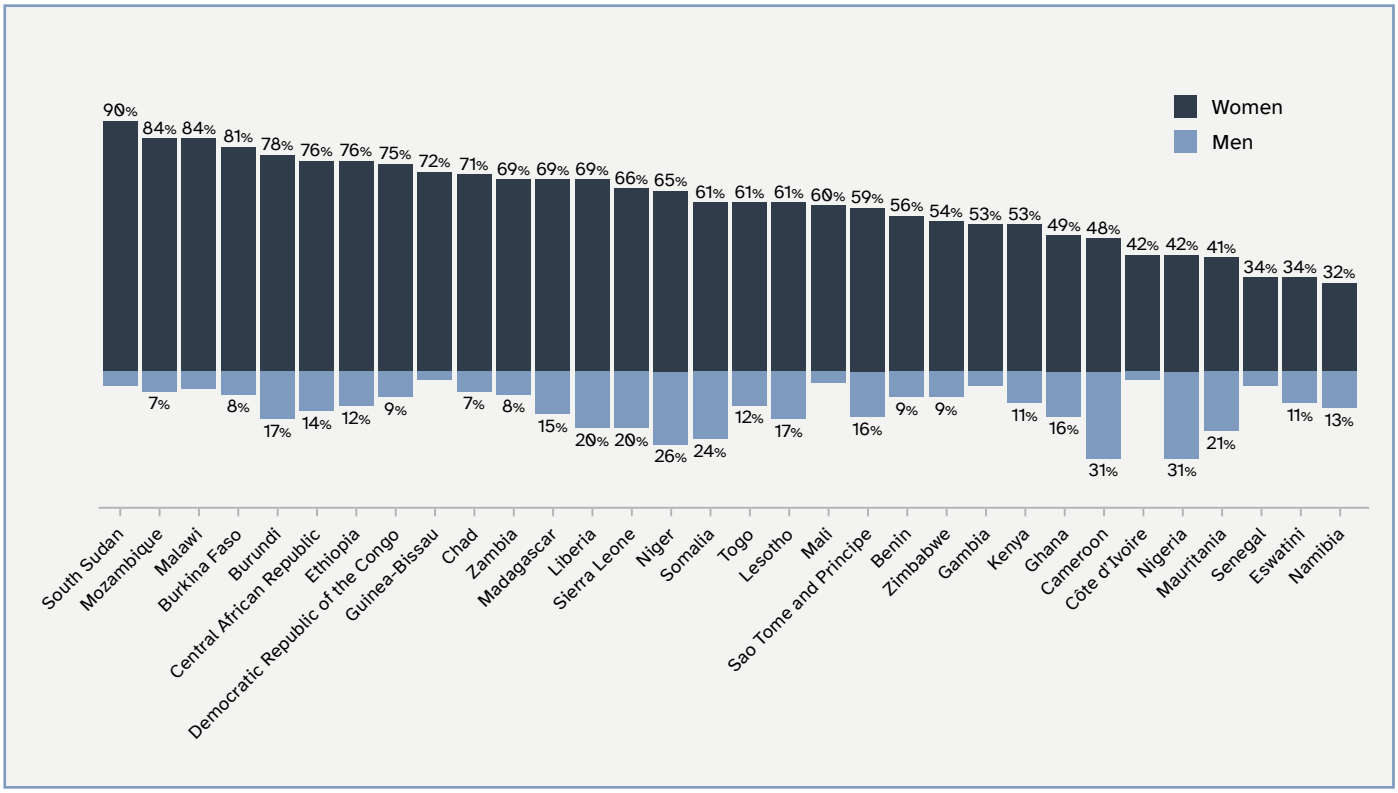
A lack of latrines with water access can pose a significant impediment to people who are menstruating, by restricting their mobility and full participation in public life. For example, some schoolgirls would often stay at home to manage their periods, missing multiple days of school (McMahon et al., 2011).

Governance and leadership

While Sub-Saharan Africa faces profound gendered challenges in water access, governance and sanitation, the region also exhibits transformative leadership. The Africa Water Vision for 2025, endorsed by the African Union, positioned gender equity as central to achieving water security across the continent (African Union/ECA/AfDB, 2000). However, implementation has been slow, with fewer than 30%

[16] 'Absolute water scarcity' is defined as when annual renewable freshwater availability falls below 500 m^3 per person per year (Falkenmark, 1989).

Figure 7.1 Primary responsibility for water collection in rural African areas in those households where water has to be collected off the premises, by gender (percentage), 2015



Note: Data do not add up to 100% as not all households harvest water, and data for some households are not available.
Source: World Bank (2024, fig. 1, based on World Bank and UNICEF data).

of African countries integrating gender targets into national water policies in 2022 (AMCOW/African Union, 2022).

Cultural norms and beliefs that prioritize men as decision-makers in water-related issues often hinder women from actively participating in important discussions, even when they are present. Women often bear the brunt of most water-related chores at home (see Chapter 2), but are significantly underrepresented in the water sector (see Chapter 10 and Figure 4.1), holding only 20% of jobs in 2019 (World Bank, 2019). They tend to have less access than men to productive resources like water, land and livestock (see Chapter 3).

Across Africa, women can face discrimination when asserting their opinions in professional settings, due to sociocultural norms and practices that ascribe community decision-making responsibility to men. For example, within Malawi's urban water user associations women have mainly occupied low-pay positions at water kiosks, and have been excluded from decision-making spaces such as WUA boards (Adams et al., 2018).

Despite an increase in women earning advanced degrees in relevant disciplines, the persistent perception of water and peacebuilding professions as 'male domains' has impeded women's educational and career progression (Dube, 2010). Stereotypes that women have limited education, management and leadership experience, as well as lack of time, capital and social networks, are common. Educational disparities, partly fuelled by these prevailing stereotypes, often hinder girls and women from acquiring the knowledge and skills required to compete for leadership roles in the field. These stereotypes may be reinforced by existing education systems that discourage girls from focusing on science, technology, engineering and mathematics (STEM) subjects, further limiting their pursuit of technically focused water sector careers (Mugo et al., 2025). Persistent deficiencies in legal and institutional frameworks, particularly national laws, have often lacked gender-specific provisions, exacerbating the status quo (ELI/RRI, 2020).

A content analysis of selected policy documents on drinking-water, sanitation and hygiene (WASH) from Ghana, Kenya and Uganda revealed policies

inadequately acknowledge WASH-related gender-based violence (GBV) and pay little attention to the complex ways gender and WASH are intimately connected (Dogoli et al., 2023). Beyond victim narratives, African women have catalysed grass-roots movements challenging structural inequalities. Movements like Akina Mama wa Afrika and the African Women's Development and Communication Network advocate for intersectional water justice, decolonized aid and feminist ecological frameworks that put African people, especially women, at the heart of decision-making, leadership and knowledge.

Various initiatives in Sub-Saharan Africa have been gathering evidence on legal barriers to gender-responsive reforms. For instance, the Horn of Africa Groundwater for Resilience Project, developed in cooperation with the World Bank Water Global Practice gender and community engagement team, has focused on identifying gender gaps and implementing actions to address them (World Bank, 2023). In Grand-Bassam, Côte d'Ivoire, the African Water and Sanitation Association has hosted regional leadership training for professional women's networks to address the under-representation of women in public water and sanitation services (AfWASA, n.d.). The training brought together women's networks from 15 African countries, with the goal of equipping participants with essential skills in leadership, advocacy, self-esteem and mentoring so they can contribute to a more inclusive and diverse governance, more balanced decision-making, greater innovation and services better tailored to community needs.

The Women in Water Diplomacy Network, launched in 2017 in the Nile basin, is another significant effort aimed to increase women's participation in high-level water diplomacy processes and improve gender equality in transboundary water management (SIWI, 2022). In Zimbabwe, key authorities responsible for water resources management (WRM) have designated focal points to address gender policy and gender-related concerns (UNEP-DHI/GWP/UN Women, 2025).

Water, ecosystems and climate change

In Sub-Saharan Africa, erratic rainfall patterns and prolonged droughts are becoming more common, exacerbating water scarcity. The degradation of wetlands and forests can undermine people's ability to secure household water and food, which disproportionally affects women as they have the main responsibility for these tasks (UN Women, 2023). Despite women's central role in adaptation, a review of Sub-Saharan Africa shows women often provide manual labour for climate adaptation projects, and men tend to dominate technical and decision-making roles. This can limit women's influence over strategies for ecosystem and water resilience (Mutanda and Nhamo, 2024).

Many countries in Sub-Saharan Africa, particularly fragile states, have governance challenges and resource constraints that can hinder effective climate change adaptation and water management. In light of these challenges, a range of low-impact solutions are being explored to simultaneously address issues of water scarcity and ecosystem degradation and to enhance climate resilience (World Bank, 2025). The post-2025 Africa Water Vision is contributing to advancing gender equality by emphasizing the importance of mainstreaming gender in water governance, recognizing that the equal and meaningful participation of women in decision-making processes and WRM can lead to more equitable access to water resources and sustainable development.

Technology and innovation

Several emerging issues challenge the integration of gender and technology in water management, including the persistent gender disparity in STEM fields. This can affect women's ability to contribute to technological innovations that could enhance the design, monitoring and scaling of nature-based solutions in water management. In Sub-Saharan Africa, digital inclusion remains a profound gender challenge; for example, for every 100 men with spreadsheet skills, only 40–44 women demonstrate equivalent proficiency, and fewer than one in three STEM graduates are women (UNESCO, 2024).

Efforts to increase women's participation in STEM, such as the Sahel Groundwater Initiative, have aimed to address educational obstacles and create favourable working environments for women in these fields. Projects in the African Great Lakes region such as the Cooperation in International Waters in Africa's gender-transformative training on transboundary water governance have also highlighted the importance of gathering inputs from women and grass-roots organizations to inform water management strategies (Hagerman, 2021). Decentralized community-based solar water

schemes and mobile-based irrigation financing mechanisms are fast evolving across Africa, offering adaptable nexus-aligned solutions (GSMA, 2024; UNFCCC, 2025).

Young women innovators are emerging as critical actors in Africa's water and climate sectors – from coding climate-smart irrigation apps to leading social enterprises in menstrual hygiene management. However, their participation is often constrained by lack of funding, mentorship and representation in policymaking spaces. Targeted investment in youth-led nexus solutions could accelerate progress towards achieving the Sustainable Development Goals (SDGs) while bridging intergenerational gender gaps (UNDP, 2025).

Capacity-building

Capacity-building and training programmes are crucial for advancing gender-responsive water governance in Sub-Saharan Africa. Initiatives such as those of the Southern African Development Community Groundwater Management Institute have been instrumental in promoting gender equality, by focusing on diversity in groundwater-related professions and by ensuring women and youth are included in capacity-building activities that could strengthen their technical, professional and leadership skills (Huang and Hagerman, 2023). Projects like the Climate Resilience and Water Security initiative in Angola, which support women's participation in community organizations and water supply management, also contribute to these efforts (Aguero et al., 2023).

Digital skills training for women and girls in fragile, conflict and violent settings in Nigeria is an example of initiatives aimed at improving women's agency and access to economic opportunities (Lawal and Robinson, 2025). Such programmes can provide women with the skills and knowledge needed to take on leadership roles and make informed decisions in the water sector.

Water financing

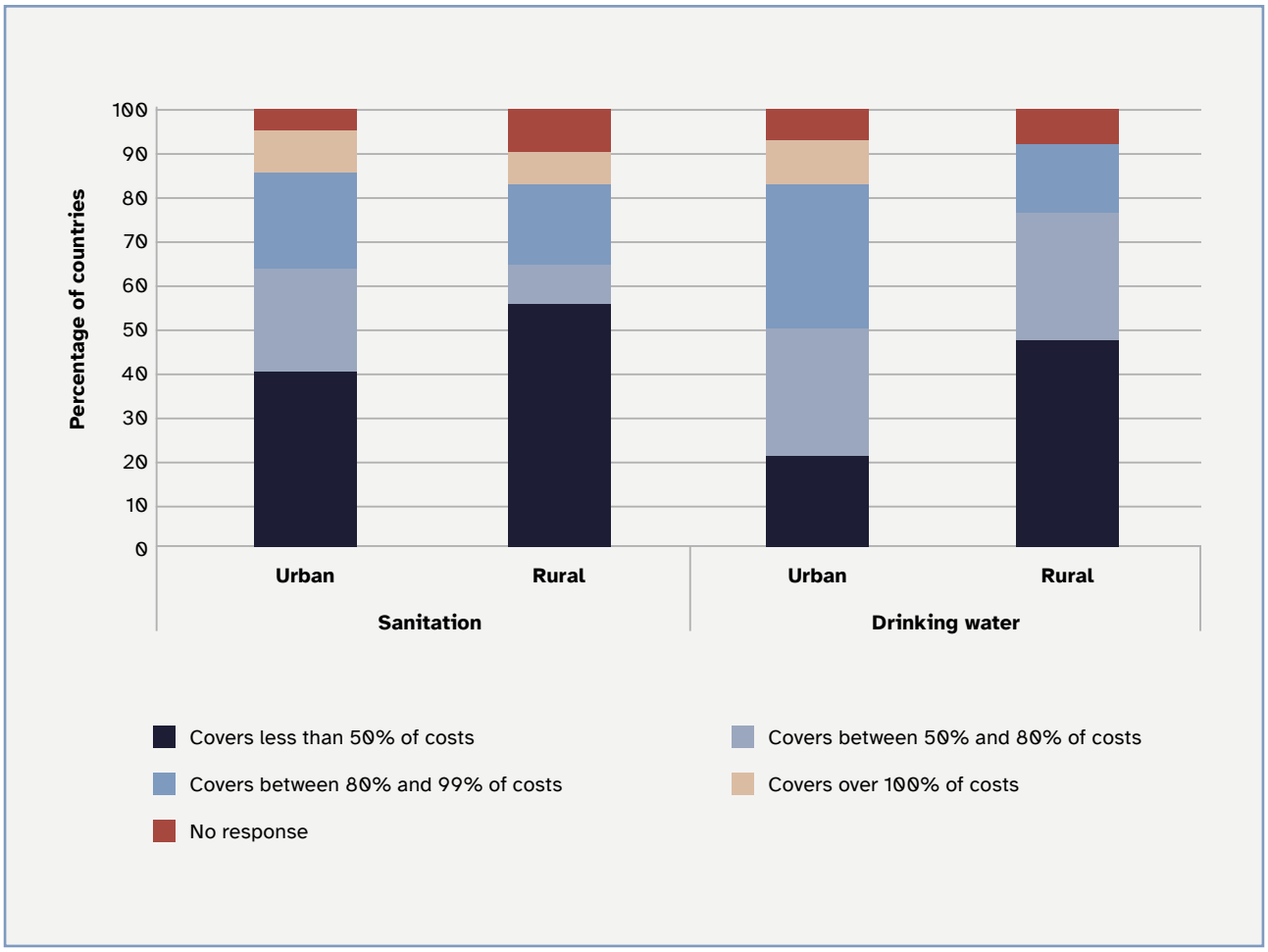
The African Development Bank estimated the total annual investment to achieve WASH-related objectives in Sub-Saharan Africa was US$64 billion, yet investments ranged between only US$10 billion and US$19 billion annually (African Union, 2023). Sub-Saharan Africa grapples with an exaggerated perception of risk, complicated by its reliance on donor-funded pilot projects, and may need to pivot towards sovereign-level financing mechanisms. Blended finance models, regional climate risk pools, diaspora bonds and Africa50 investments may provide scalable options that reduce dependency on external aid (Mo Ibrahim Foundation, 2025). Investors tend to view water-related investments as riskier and less appealing than other sectors due to their long project timelines, high capital costs, regulatory uncertainty, low or unpredictable revenues, technical complexity, and exposure to environmental and climate risks, which can make it difficult to attract investments (Farnault and Sarr, 2024).

Capacity-building and training programmes are crucial for advancing gender-responsive water governance in Sub-Saharan Africa

Tariffs for water services throughout Sub-Saharan Africa fall considerably short of cost recovery levels, with less than half of African countries being able to recoup over 80% of their operating and maintenance costs for WASH services through tariffs alone (Farnault and Sarr, 2024). Full cost recovery is rare in urban and rural contexts in Africa (Figure 7.2). The rural sectors are particularly underfunded, with many countries recovering less than half their costs. This highlights persistent urban–rural inequities in water and sanitation financing, with rural populations facing greater vulnerability to underinvestment.

The water supply and sanitation sector lags far behind other capital-intensive sectors in terms of mobilized private finance, with the sector accounting for only 2% of private investments on average in Africa between 2012 and 2020 (Farnault and Sarr, 2024). Other sources of water financing such as government taxes and multilateral aid or loans are insufficient to meet the sector's growing needs. Therefore, many Sub-Saharan African countries lack the necessary infrastructure to capture, store and distribute water effectively. Inadequate investment in water infrastructure can reinforce the burden of unpaid domestic labour, which may have a disproportionate impact on women in the region.

Figure 7.2 Cost recovery levels (via tariffs) for sanitation and drinking water in Africa, 2021



Notes: Forty-seven countries were surveyed. The costs refer to operations and maintenance costs.
Source: Based on Farnault and Sarr (2024, fig. 2.1, p. 22).

There is potential for scaling up public–private partnership (PPP) finance in water by looking beyond financial transactions. Countries like Côte d'Ivoire and Gabon have enacted multiple reforms including "*the introduction of legislation protecting women from gender-based discrimination in financial services and domestic violence, and the mandate for equal remuneration for work of equal value*" (Tavares and Benetatos, 2023).

7.1.2 Conclusions

Socio-economic obstacles, traditional customs and inheritance laws that have traditionally favoured men often exacerbate gender disparities in access to water across Sub-Saharan Africa. This can lead to unequal gender participation and impacts from water-related development and climate challenges.

Strengthening governance structures may help to achieve equitable access to water resources and WASH services, recognizing the critical role women play in water management and decision-making processes and incorporating Indigenous knowledge.

Capacity-building initiatives can also help to empower women and youth through education and professional development, thereby promoting gender equality in water-related professions. Gender-based messaging, monitoring and evaluation can bring about behavioural changes in participation and water use in communities, to prevent gender-related disparities in water access. By mainstreaming gender considerations into water management and climate-resilience efforts, Sub-Saharan Africa can move towards more equitable and sustainable development outcomes.

Many water projects in the region are underfunded, and there is a need for increased investment to support gender-responsive initiatives. Inclusive and gender-responsive financing can help to address the water challenges of Sub-Saharan Africa. Leveraging mobile money technologies for bill collection, fostering PPPs, and executing targeted marketing and communication strategies are key elements in building trust and attracting vital investments to enhance water infrastructure and services.

Furthermore, gender-responsive financing can drive innovation in the water sector by encouraging the development of solutions that address the specific needs of women and marginalized groups. This requires collaboration between governments, international organizations and private sector stakeholders to mobilize resources and ensure financing mechanisms are inclusive and equitable in Sub-Saharan Africa.

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7.2 Asia and the Pacific

The Asia–Pacific region is home to 4.7 billion people, or around 60% of the world's population (ESCAP, 2024). It exhibits significant cultural, socio-economic and environmental diversity, which shapes how people access, manage and benefit from natural resources, including water. Although gender dynamics vary across contexts, women and girls play a vital role in managing domestic and productive water resources. Yet they face gender-specific water challenges across the region. These include: limited and unequal access; risks to health, safety, education, and economic and livelihood opportunities; under-representation in water governance; and increasing threats from climate change.

Floods and droughts have led to an increase in domestic care burdens and GBV, thus exacerbating gendered risks and threats

Highlighting such interlinkages is key, as the region is not on track to achieve any of the SDGs by 2030 (ESCAP, 2025). A gender-responsive water future for the region could be achieved through a transformative approach that includes bottom-up and top-down policy processes to mainstream gender in policymaking, and to shift mindsets and social norms.

7.2.1 Climate change, water and gender-related vulnerabilities

The region includes some of the world's most climate-vulnerable countries, such as the Pacific, and South, Southwest and Southeast Asia (ND-GAIN, n.d.), where women and girls may be disproportionately affected by climate impacts. Many of the deaths in climate-related water disasters have been women. For example, the percentages of women in total mortality rates were: 61% for Cyclone *Nargis* in Myanmar in 2008, 70–80% for the 2004 Indian Ocean tsunami

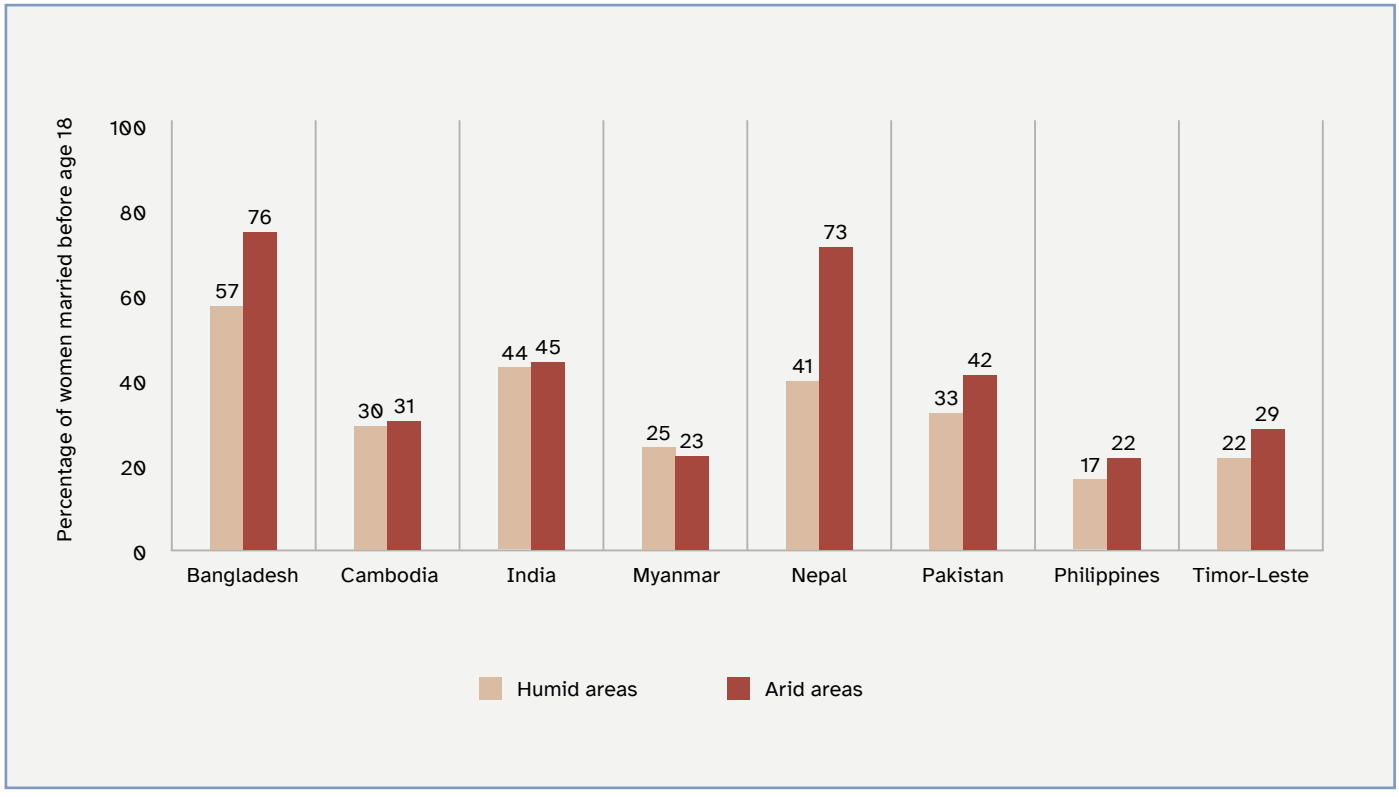
in various villages in India and Indonesia, and 91% for the 1991 cyclone in Bangladesh (UNDP, 2013). Such heightened mortality rates are partly because women are more likely to stay behind to look after children and relatives due to social norms, and are less equipped with skills such as swimming and climbing that are disproportionally taught to boys (Oxfam, 2005; Alam and Rahman, 2014; SIWI, 2017). Floods and droughts have led to an increase in domestic care burdens and GBV, thus exacerbating gendered risks and threats (UN Women, 2024).

Despite women comprising more than half of the labour force in agrifood systems in subregions across Asia (FAO, 2023a), in some Asian countries, women hold less than 20% of the agricultural land (Shen, 2024). When coupled with the consequences of climate change, such gendered economic inequalities and dependencies may be intensified (UN Women, 2022a; Oxfam, 2023). In Asian countries where child marriage is still socioculturally prevalent, an increase in aridity has been identified as a factor correlating with a higher rate of girls being married under the age of 18 (UN Women, 2022b; Figure 7.3).

Small island developing states (SIDS) in Asia and the Pacific have experienced acute shortages of drinking water and irrigation due to increased water usage coupled with climate change impacts such as prolonged droughts, extreme precipitation events and sea-level rise (UNESCO, 2015). In addition, as a result of sea-level rise and groundwater overdraft, saltwater intrusion into coastal aquifers is further exacerbating water scarcity across the region (Kumar, 2012; Islam et al., 2019).

In Bangladesh, a country where more than 44 million people live in coastal areas (Ahsan et al., 2024), women often have to walk long distances to collect vital fresh water for their families, due to salinized groundwater. They may also be exposed to serious gender-specific health risks. For example, the consumption of saline groundwater has been linked to a much higher chance of suffering from hypertensive disorders during pregnancy, or the use of saline groundwater for washing sanitary towels and bathing can strongly increase the chance of contracting gynaecological infections (Khanam et al., 2023).

Figure 7.3 Proportion of women aged 18–49 years who were married before age 18, by aridity index, in selected Asia-Pacific countries, 2015 (percentage)



Source: Based on UN Women (2022b, fig. 10, p. 12).

In Nepal, Practical Action has adopted a Missing Voices Approach. This has promoted the active inclusion of women and other at-risk and marginalized groups in disaster risk reduction strategies and early warning systems planning (Brown et al., 2019). Viet Nam has established a sex-, age- and disability-disaggregated data framework, which has enhanced data monitoring to provide insights into the relationship between vulnerability and disasters, including the impacts of water-related risks on women and girls in vulnerable communities (ESCAP/UN Women, 2024). In Fiji, Women's Weather Watch has used community radio to provide women with timely weather updates and disaster preparedness and awareness information, positioning them as first responders to hazards such as floods (femLINKpacific, 2020).

Across the region, several initiatives have aimed to empower women in addressing climate-related water risks and strengthening resilience. In Bangladesh, the Reducing Vulnerability of Women Affected by Climate Change through Viable Livelihood Options project, initiated by Bangladesh Rural Advancement Committee, focuses on empowering women to lead climate adaptation initiatives in their communities, including training on sustainable agricultural practices and disaster preparedness (BRAC, n.d.). In India, women farmers have been trained to use and maintain the Bhungroo system, which artificially recharges aquifers to supply water for irrigation during periods of drought. It has been replicated in other parts of Asia and in Africa based on the sourcing of local materials and the personal involvement of the end users in construction and maintenance (Women and Gender Constituency, 2018). In Pakistan, the FAO Transforming the Indus Basin with Climate Resilient Agriculture and Water Management project foresees a 10% quota for female technicians in the traditionally male-dominated field of agriculture and WRM. It is also providing training on climate-resilient agriculture and on-farm water management practices, directly or indirectly, to 48,000 women and youth by establishing nearly 1,000 farmer field schools and women open schools between 2020 and 2026 (FAO, 2023b). Bangladesh, Nepal and Pakistan have also followed the call of the Paris Agreement for gender-responsive climate adaptation and have subsequently developed climate change gender action plans with large emphases on water (IUCN, 2012; MoEF of Bangladesh, 2013; IUCN Pakistan, 2022).

7.2.2 Gender equality and drinking water, sanitation and hygiene

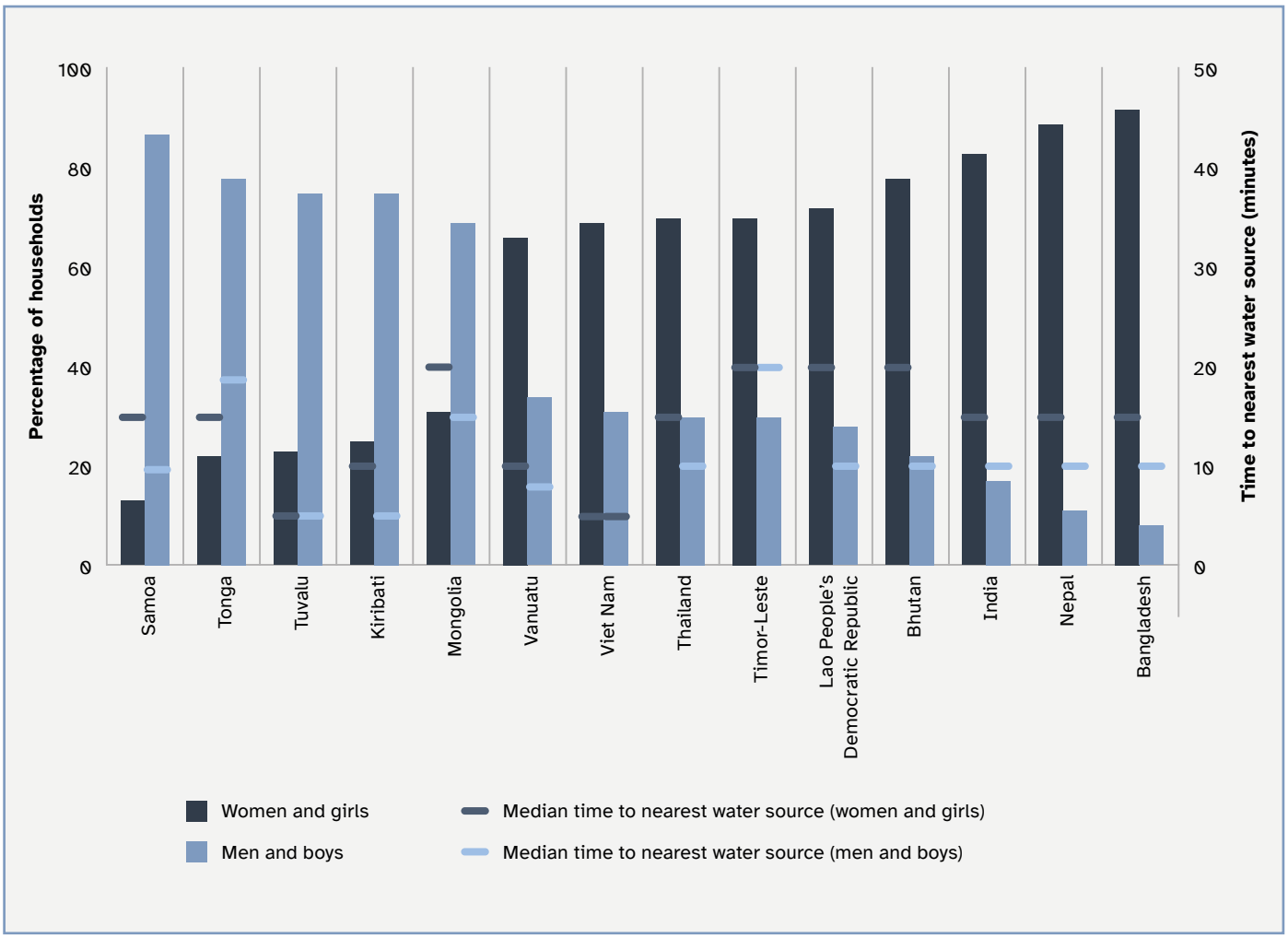
Although significant progress has been made in WASH in the Asia–Pacific region, challenges remain in rural areas and informal settlements, with disproportionate impacts on women and girls. The number of women and girls drinking water from unimproved surface water sources in Central Asia was 107 million in 2000; this subsequently decreased to 61 million in 2015 and to 31 million in 2022. In East and Southeast Asia, the number reduced from 188 million in 2000 to 73 million in 2015 and then 30 million in 2022. However, in Pacific SIDS, the corresponding number of women and girls remained at 2 million from 2000 to 2015, and then increased to 3 million in 2022 (UN Women/DESA, 2023).

Across several countries in the Asia–Pacific region, women and girls walk further and spend more time collecting water than their male counterparts

By 2018, across the region, women were reported to spend 4.1 times more time than men on unpaid care and domestic work, primarily due to traditional gender and social norms (ILO, 2018). Responsibilities such as cooking, cleaning and caring for the sick – each demanding substantial water use – often fall on women. In Central, South and Southwest Asia, 24% of the population relies on off-premises water collection and over two-thirds of the time, women and adolescent girls collect water (ESCAP/UN Women, 2024).

Across several countries in the Asia–Pacific region, women and girls walk further and spend more time collecting water than their male counterparts (Figure 7.4). This may prevent girls from attending school and restrict women's ability to engage in other productive activities, in addition to putting them at danger of assault and harassment (ESCAP/UN Women, 2024). Furthermore, a 2016 meta-analysis found a quarter of girls in India did not attend school during menstruation (Van Eijk et al.,

Figure 7.4 Proportion of households by person in charge of fetching water, and median time to water source for households without water on premises, latest available year in selected Asia–Pacific countries (percentage, minutes)



Note: All countries with available data for years 2000 and onwards on the multiple indicator cluster survey and demographic and health survey repositories have been included in the analysis.

Source: Based on UN Women (2022b, fig. 5, p. 7).

2016), a statistic that can possibly be attributed to a lack of adequate toilets. However, an increase in adequate and sex-specific toilets in schools led to a substantial increase in the enrolment of pubescent-aged girls (Adukia, 2017).

There have been various projects and approaches in the region aimed at addressing gendered disparities in WASH. In Timor-Leste, coupling infrastructure investments with community engagement through facilitating discussions on WASH, gender roles and power dynamics has led to improved sanitation practices and greater participation of women. This applied to WRM, and also to acquiring leadership roles in the community (WaterAid/WSUP/UNICEF, 2018). In Bangladesh, the Rural Water, Sanitation, and Hygiene for Human Capital Development Project has enabled women to access microfinance loans and sanitation grants to improve household WASH facilities. For example, it provided financial resources to 150 women entrepreneurs to help them better market and sell soaps, disinfectants and menstrual hygiene products directly to households, ensuring better access for those hesitant to purchase them in public markets (World Bank, n.d.). Similarly, in Cambodia, the Water for Women Fund, SHE Investments and International Development Enterprises organized gender-focused entrepreneurship incubators, supporting female latrine business owners (Water for Women Fund, n.d.). In the Philippines, the Economic and Social Commission for Asia and the Pacific has implemented a

gender-responsive project aimed at reducing the unpaid burden disproportionately carried by women and girls. The project led to the drafting of a provincial care ordinance. This aimed to decrease time spent on domestic unpaid work, especially in remote or disadvantaged areas by committing the provincial government to invest in improved water infrastructure, such as jet pumps and water systems, and other time- and labour-saving equipment such as washing machines and stoves (ESCAP, 2022).

7.2.3 Women and water resources governance

Evidence has shown mainstreaming gender and including women in water supply projects and policies can improve effectiveness, sustainability and equitable sharing of benefits (Gross et al., 2001; Bouman-Dentener, 2015). Women – including those from Indigenous and local communities – possess expertise and traditional knowledge as well as unique experiences, ideas and voices that are vital for shaping water resources policies, programmes, financing allocations and international dialogue. Furthermore, including women is an opportunity for a project or policy to better reflect local and context-specific gender realities, roles and decision-making dynamics within communities.

Case studies in the Asia–Pacific region have shown that not recognizing or addressing these different localized gender dynamics has strongly impeded progress on general and water-related development projects (CGIAR/ICRISAT, 2019). Nevertheless, women have remained highly under-represented in decision-making bodies, especially at the community and regional levels (Grant et al., 2019). Meaningful gender inclusion is a slow, multisectoral and multilevel process of social transformation, requiring more than individual women's leadership. It also necessitates the empowering of women's civil society to meaningfully engage with decision-makers, practitioners, men and boys. Strengthening community women's groups can help to ensure participation is not 'tokenistic' but is embedded in action partnerships that sustain gender-sensitive solutions (Bouman-Dentener and Schuster-Wallace, 2024).

Gathering sex-disaggregated data is necessary for tracking women's representation in water governance, and to enable effective governance outputs that tackle gender-specific inequalities and vulnerabilities through gender-responsive policies and projects. Without such data, the unique challenges faced by women and marginalized groups can remain invisible. However, the Asia–Pacific region has struggled with collecting sex-disaggregated data (Open Data Watch/Data2X/ESCAP, 2021). For example, even though there are sufficient data for most of the SDG 6 indicators, sex-disaggregated data are largely absent or are collected in a fragmented and uncoordinated way across the region.

Some good examples to strengthen gender-responsive water resources governance have emerged. In the Philippines, the 2009 Magna Carta of Women mandated that women make up 40% of development councils (PCW, 2010), which oversee planning for WASH, and integrated water resources management (IWRM). In addition, since 1995, government agencies and departments at all levels must have reserved at least 5% of their budget to gender- and development-related programmes (DBM of the Republic of the Philippines, 2024). Similarly, in Vanuatu, the 2016 amendment to the Water Resources Management Act required 40% female representation in all rural water resources committees, with enforcement ensured through committee registration (Republic of Vanuatu, 2016). Australia and some Pacific SIDS have seen some strong Indigenous women's leadership in water governance that has promoted the integration of traditional knowledge in managing water resources (Jiménez et al., 2014). In Central Asia and Afghanistan, the Women, Water Management and Conflict Prevention project has empowered female water professionals by providing support to career development and networking activities. It has also promoted exchange of experiences and mutual learning for increased awareness on gender-sensitive water governance and water diplomacy (OSCE, n.d.). In India, Parmarth Samaj Sevi Sansthan launched the Jal Saheli Abhiyan campaign in the drought-prone Bundelkhand region. The initiative engaged women as water stewards and community leaders by training them in traditional and sustainable methods to restore ponds and wells and to check dams for groundwater recharge. Women have become actively involved in developing village water plans and participating in village water councils (Tripathi, 2025).

Across the region, projects and initiatives have emerged to improve the collection of sex-disaggregated data. In the Pacific, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Asian Development Bank launched a project aiming to make future water policies and projects more gender inclusive. One of its key measures was to improve the availability of sex-aggregated data in 14 island states in the Pacific. Such data were previously very sparse (Imburgia et al., 2025). In Southeast Asia, the Association of Southeast Asian Nations (ASEAN) Secretariat and UN Women launched the ASEAN South-South and Triangular Cooperation Group on Gender Statistics for Tracking Progress towards the SDGs and Beyond in 2023. Through collaboration and knowledge-sharing, this mechanism aimed to boost gender data production and use, supporting gender-responsive implementation of the ASEAN Community Vision 2025 and SDG monitoring. It strengthened ASEAN's ongoing efforts – such as publishing the *ASEAN Gender Outlook* – to highlight gender disparities and guide policy action regarding the SDGs (UN Women, 2023; ASEAN/UN Women, 2024).

7.2.4 Conclusions

Ensuring gender equality in water access, governance and management is a matter of social justice and also a prerequisite for sustainable development and climate resilience. Addressing the gender- and water-related challenges in Asia and the Pacific requires transformative changes in mindsets, social norms, data, policy and investment. Examples from across the region show how policymakers and practitioners can strengthen water governance by enhancing gender-responsive approaches, inclusive decision-making and targeted interventions recognizing women's and girls' key roles as agents of change. Overall, neither SDG 5 nor SDG 6 can be achieved without the other. By fostering gender-responsive water governance, the Asia–Pacific region may be able to secure a more just, sustainable and water-secure future.

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7.3 Latin America and the Caribbean

Water is essential for domestic and caregiving tasks. In Latin America and the Caribbean, these responsibilities fall predominantly on women, and are typically unpaid and unrecognized. Despite global and regional commitments to gender equality and sustainable development, water governance in the region continues to reflect deep structural inequalities. Women and girls – particularly in rural, Indigenous and low-income communities – bear a disproportionate burden of water-related responsibilities, which can restrict their access to education, employment and leadership opportunities.

In 2014, in Panama, 63% of the households with the lowest incomes relied on women to fetch water, compared to only 30% in the wealthiest households (Borja-Vega and Grabinsky, 2020). In addition, the lack of adequate sanitation facilities can expose women and girls to health risks and violence, including physical and sexual assaults when they travel long distances to collect water (ECLAC, 2021).

7.3.1 Water supply and sanitation for work and education

In the region, 25% of schools lack basic drinking water services, affecting approximately 37 million schoolchildren. Furthermore, 39% of schools do not have access to handwashing facilities, affecting over one-third of the region's students – up to 59 million children (UNICEF, 2025). Inadequate sanitation facilities – particularly during menstruation – can significantly lower girls' school attendance and limit their participation in community activities.

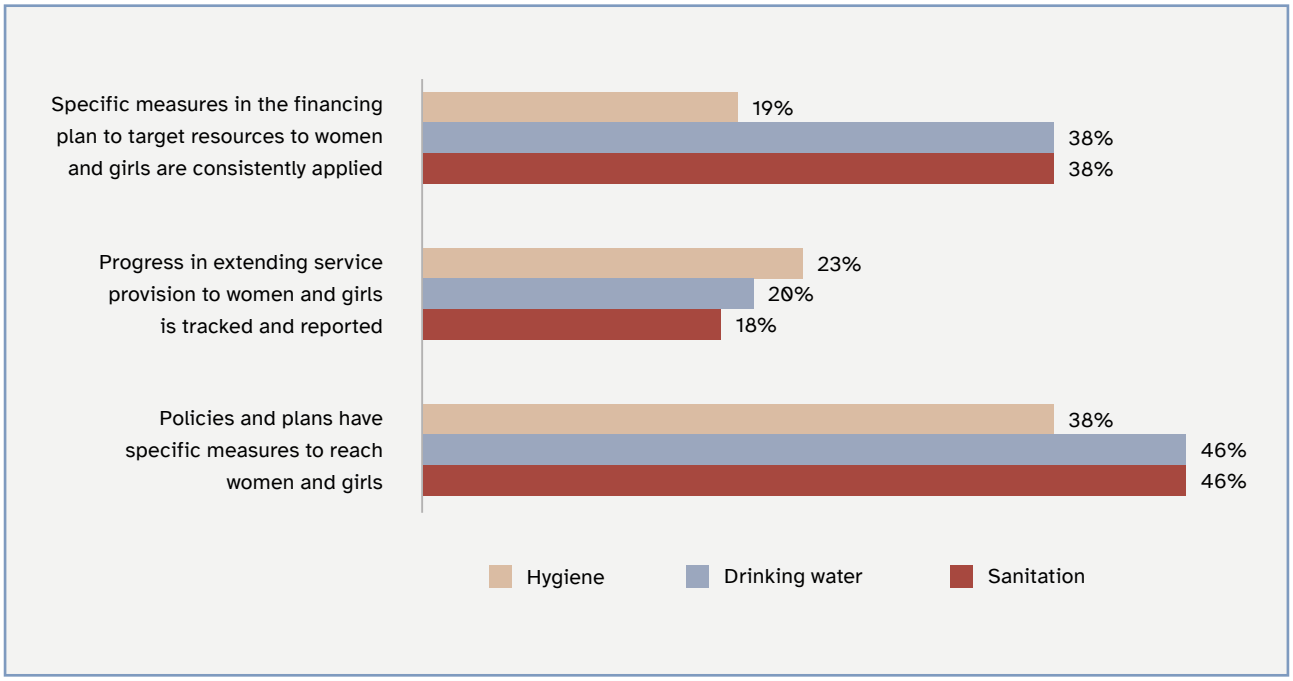
Inaccessibility to these basic services can also limit women's participation in education, work, family gatherings, religious services or other public gatherings. In 2018, 17% of women in Suriname were reported to abstain from participating in activities during menstruation due to inadequate facilities, while in Costa Rica, 6.7% reported the same, with higher prevalence in rural areas than in urban areas. This number increased to up to 16.1% when the head of the household did not have primary education (MS/INEC/UNICEF, 2018; Ministry of Social Affairs and Public Housing of Suriname, 2019).

In Latin America and the Caribbean, access to water for agriculture is closely tied to land tenure

Despite growing recognition of the importance of gender-responsive WASH policies, progress across Latin America and the Caribbean remains uneven (Figure 7.5). As of 2021, less than half of the countries in the region had policies and plans with specific measures to reach women and girls: 46% for drinking water, 46% for sanitation and 38% for hygiene. Even fewer countries reported tracking progress in extending services to women and girls: only 23% for hygiene, 20% for drinking water and 18% for sanitation. When it comes to financing, only 19% of countries consistently applied specific measures to allocate resources for hygiene services targeting women and girls, while drinking water and sanitation each stood at 38%. These gaps in planning, financing and monitoring underscore the need for stronger institutional commitments and targeted investments to ensure WASH services truly address the needs of women and girls across diverse contexts (WHO, 2022).

Closing the gaps presented in Figure 7.5 could be achieved by prioritizing WASH-related investments in underserved areas – such as rural schools without toilets and communities where women and girls walk for hours to fetch water – and adopting protective measures (Box 7.1). These include establishing 'safe route' programmes, whereby girls and young women can reach latrines or water points without fear, and installing lighting and fencing around community sanitation facilities to prevent GBV (Saravia Matus et al., 2022).

Figure 7.5 Proportion of Latin America and Caribbean countries implementing gender-specific drinking water, sanitation and hygiene measures, 2021



Source: Authors, based on information from WHO (2022).

Box 7.1 Empowering Wixárika women through water access: The Ha Ta Tukari experience

As part of the Ha Ta Tukari project – implemented from 2010 to 2019 in Wixárika communities of Mezquitic, Jalisco, Mexico – a central focus was placed on empowering women through improved access to water. By installing 56 rainwater harvesting systems, the project increased daily water availability from just 6 litres per person to 17.7 litres. This was still below World Health Organization recommended minimum amounts, yet a transformative change for the remote households. Before implementation, women spent up to two hours daily collecting water from contaminated sources. The reduced burden – an 88% decrease in water collection time – allowed these women to engage in home gardening, artisanal work and health education programmes, directly supporting income generation and community well-being. Health outcomes also improved significantly, with a 50% reduction in diarrheal diseases. Through training and participation in system maintenance and sustainability workshops, women became active stewards of water in their communities, reinforcing their leadership in environmental and household decision-making.

Source: Lobo (2019).

7.3.2 Access to water resources for agriculture

In Latin America and the Caribbean, access to water for agriculture is closely tied to land tenure, which is often a legal prerequisite for obtaining water-use rights. Yet, only about 30% of rural women hold formal land titles, thus limiting their access to irrigation systems, subsidies and technical assistance. Monitoring this issue remains difficult due to the lack of current data. Available figures show that in countries like Haiti and Peru, women managed around 30% of agricultural land, whereas in Guatemala and Honduras, the proportion

was significantly lower at around 19% and 14%, respectively (FAO, 2025).[17] Beyond land and water rights, women also encounter obstacles to credit, technology, leasing and training – challenges compounded by the burden of unpaid domestic work.

While certain irrigation policies launched in the region[18] have aimed to improve agricultural productivity and land access, these instruments often do not fully address rural women's limited access to technology and resources, thus perpetuating gender gaps in productivity and well-being. In Argentina, the programme En Nuestras Manos – launched in 2015 – sought to provide non-repayable funding to support technology transfer, equipment and supplies for cooperative projects run by women from family farming, rural and Indigenous communities. Through 11 federal committees and collaboration with provincial governments from 22 provinces, 182 comprehensive projects were approved in 2021, totalling over US$807 million, and directly benefiting more than 2,700 women (Ministry of Economy of Argentina, n.d.).

In Chile, Law 18.450 on the Promotion of Private Investment in Irrigation and Drainage Works (National Congress of Chile, 1985) aimed to increase the country's irrigated area by encouraging more efficient water use and incorporating new lands into agricultural production. On 2 August 2023, a new Irrigation Law was enacted, modifying and extending Law 18.450 for seven years. The reform explicitly stated access to its benefits will be promoted through a gender-inclusive approach, fostering the participation of women. Noteworthy outcomes of the amendment include the allocation of Ch$2 billion (approximately US$2 million) in 2024 to support irrigation projects led by women farmers across the country, and the launch of the first online course aimed at female engineers in the agricultural sector, focused on the design of on-farm irrigation systems powered by photovoltaic cells (National Congress of Chile, 2023; INDAP, 2024).

Nevertheless, a persistent lack of gender-responsive investment in agricultural policies across the region's countries continues to constrain capacity-building and limit development of opportunities for women in this sector. This underinvestment translates into reduced access to key resources such as financial services, agricultural extensions and technical programmes. These are crucial elements for strengthening women's roles in agrifood systems and advancing their full economic participation (FAO, 2023).

7.3.3 Inclusive water governance

Complex dynamics of power, tradition and policy frameworks can affect women's participation in water governance across Latin America and the Caribbean. While formal governance structures often remain male dominated (see Chapter 9), local experiences show women play critical – though frequently informal – roles in managing and distributing water resources.

For example, a case study in Cochabamba, Plurinational State of Bolivia, revealed that while men dominated formal water governance structures, women formed a collective authority that ensured water distribution to the most vulnerable community members. Their decisions were respected by the formal governing body, with its male majority (Wutich, 2012).

However, in Chiapas, Mexico, a study found only 17% of water committee members were women, with their participation often hindered by legal and normative barriers. Women without land titles have frequently been deemed ineligible by their communities, and sociocultural constraints have limited their public engagement, with their contributions often dismissed for not aligning with male standards of behaviour (Gutiérrez Villalpando et al., 2013). In Central America, water governance – for surface water and groundwater – is conducted through WUAs or local water boards. In 2016, 1,120 individuals were involved in this governance, yet only 27% were women (UNESCO IHP, 2016). The lack of monitoring policies and targeted investment can undermine efforts to improve women's participation in water governance.

[17] Data from Guatemala in 2015, Haiti in 2016, Honduras in 2012 and Peru in 2019.

[18] For example, Programa Mas Inversiones para Riego and Programa Nacional de Riego con Enfoque de Cuenca (2014) in Plurinational State of Bolivia, and Programa Nacional para la Igualdad entre Mujeres y Hombres (2020–2024) in Mexico.

Some countries have taken proactive steps to address these imbalances. In Brazil, the Agência Nacional de Águas e Saneamento Básico (ANA) established the Comissão Permanente de Equidade de Gênero in 2016 to implement the National Policy Plan for Women. This initiative aimed to eliminate gender inequalities in water access and management by promoting women's participation in decision-making roles. As a result, strategies were introduced to increase women's leadership representation and improve gender equality in water governance (ANA, 2021).

Costa Rica has been a pioneer in integrating gender into water policy. The 2021 Gender Equality Policy by the Autoridad Reguladora de Servicios Públicos (ARESEP) ensures equal access to public services and decision-making for women. In early 2025, ARESEP reported having trained 1,895 women on their rights as users of public services. The training included guidance on how to file complaints with service providers, interpret water and electricity bills, understand the conditions for service disconnection and navigate other practical procedures. These efforts are part of ARESEP's broader gender policy. In collaboration with the National Institute for Women, ARESEP has signed a memorandum of understanding to advance gender-sensitive regulation of public services and to safeguard women's rights (ARESEP, 2025).

Role of women in ecosystem preservation and climate resilience

Women are often at the forefront of environmental and territorial defence movements across Latin America and the Caribbean, playing a critical role in the protection of ecosystems, traditional knowledge and community well-being. Yet, their leadership frequently places them in dangerous and highly vulnerable positions. Latin America and the Caribbean is one of the most dangerous regions in the world for environmental and land defenders. Of the 200 defenders killed in 2021 across the world, 20 of those were women, 16 of whom lived in Latin America and the Caribbean (Global Witness, 2022). This disproportionate impact highlights the risks faced by women defenders and also the profound loss to communities who rely on their leadership, ancestral knowledge and cultural practices. Women environmental defenders are not only protectors of land and water – they are also custodians of heritage and sustainability for future generations.

In response to these risks and the urgent need to support women environmental defenders, various initiatives across the region have begun to strengthen women's roles in water and environmental governance at all levels. The example from Chocó in Colombia (Box 7.2) illustrates a prominent subnational-level project. At the regional level, a key example is the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazú Agreement; United Nations, 2018).

7.3.4 Conclusions

Mainstreaming gender equality into water policy in Latin America and the Caribbean is feasible and transformative; however, it is moving at a slow rate with insufficient scaling up. Women – particularly those in rural and Indigenous communities – play a vital yet often unrecognized role in water access, management and environmental stewardship. When supported through inclusive policies and programmes, their leadership can contribute to more equitable and sustainable water governance. Nonetheless, persistent structural barriers remain. Limited access to safe WASH services, unequal land and resource ownership, and women's underrepresentation in decision-making roles continue to reinforce gender-based inequalities. The burden of unpaid water-related work particularly restricts women's opportunities for education, employment and community participation.

Promising initiatives exist. They could be replicated by considering the different regional contexts, and scaled and adapted regionally. Recognizing and integrating ancestral and local knowledge, especially of Indigenous communities, is crucial for developing culturally relevant and sustainable water policies. Achieving gender equality in water governance requires systemic change: investment in sex-disaggregated data, removal of institutional obstacles, investing in rural water infrastructure, and greater inclusion of women in water management and other interrelated sectors such as land and technology. These efforts are essential for social justice and also for building resilient, water-secure communities across the region.

Box 7.2 Strengthening women's participation in environmental governance in Chocó, Colombia

In 2018, the United Nations Environment Programme launched a pilot project in Colombia's Chocó region to strengthen women's participation in environmental governance as a pathway to sustainable peace. With a strong focus on water management and climate resilience, the initiative recognized the vital role women play in protecting natural resources and rebuilding post-conflict territories. At the heart of the project was a diploma programme – Women, Biodiversity, and Peacebuilding in Chocó – which equipped women with the tools to design and implement community-based environmental initiatives, particularly focused on improving access to water, managing its use and adapting to climate change. The programme was later replicated in 12 communities and also provided training in conflict resolution and leadership.

Participants reported increased confidence and capacity to participate in water and environmental governance. Women's involvement in local decision-making processes grew, notably in efforts to implement Colombia's Constitutional Court ruling T-622/16, which granted legal rights to the Atrato River. The project helped shift perceptions – among women and institutions – regarding women's ability to lead in the governance of water and natural resources. Moreover, it contributed to strengthening the capacity of public institutions and civil society organizations to support gender-responsive water governance. Despite persistent risks faced by women defending environmental and human rights, the project demonstrated that empowering women is essential for building water-secure, resilient and peaceful communities.

Source: Grupo Regional de Trabajo sobre Género y Medio Ambiente (2022).

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7.4 Europe

In Europe, water is deeply embedded in the social, economic and institutional fabric of daily life. Safe, reliable and affordable access to water underpins human well-being and sustainable development. Significant infrastructure advances have provided many people in Europe with household water and sanitation access. However, gender disparities persist, particularly in decision-making, labour responsibilities, climate risk exposure and recognition in governance and knowledge systems (Crider and Ray, 2022; UNICEF/WHO, 2023).

7.4.1 Status and gaps in gender equality in water governance

European water governance has developed under frameworks such as the European Union Water Framework Directive and the Sendai Framework for Disaster Risk Reduction 2015–2030. However, gender equality remains under-integrated in many national- and basin-level water strategies. Formal representation alone has not yielded substantive influence for women, particularly those from rural areas or minority backgrounds. Intersectional factors further shape this limited influence. For example, socio-economic status, ethnicity, age, disability, marital status and social stigma can affect women's opportunities to participate meaningfully in water governance and to access leadership roles. Women from marginalized ethnic groups or married women with familial responsibilities often face multiple obstacles that may limit their inclusion in decision-making processes (Filčák et al., 2017; Crider and Ray, 2022).

To achieve effective participation, policy approaches need to move beyond token representation and adopt intersectional strategies that recognize diverse experiences and enable women to hold substantive decision-making and leadership positions. Analyses have demonstrated that socio-economic and demographic factors can compound vulnerabilities, highlighting the critical importance of policies that address gender and the intersecting axes of inequality in water governance (Anthonj et al., 2020). Structural inequalities may be intensified in contexts of displacement and migration, where access to water and sanitation becomes even more precarious. In reception centres on the Greek islands, for example,

inadequate gender-sensitive WASH facilities have heightened health risks and increased exposure to gender-based violence towards women and girls. The Office of the United Nations High Commissioner for Refugees reported that bathrooms and latrines are considered unsafe after dark, and some women avoid showers for months due to fear of assault (UNHCR, 2018).

A review of participatory water initiatives in Central and Eastern Europe found that while multi-stakeholder councils exist, the perspectives of women and marginalized groups have rarely been reflected in final decisions (Biancardi Aleu et al., 2022; Crider and Ray, 2022). Water-related climate hazards – such as droughts, floods and contamination – can affect everyone, but risk perception and vulnerability may differ by gender. Europe-wide surveys indicate women report higher concern and willingness to engage in water conservation behaviours than men. This is often linked to caregiving responsibilities and risk awareness (Ergun et al., 2024).

Eligibility for subsidies is frequently tied to land titles and formal membership in WUAs that are often male dominated

A significant impediment to gender-responsive water governance is the dominance of decision-making processes and technical practices that may be shaped mainly by men and which often overlook women's local and experiential knowledge. In many European countries, engineering and hydrology departments – which shape water planning and evaluation – remain heavily male dominated. Women's situated knowledge, such as local observations of aquifer depletion or sanitation needs, has often lacked institutional legitimacy (Crider and Ray, 2022). This epistemic hierarchy may be reinforced in climate adaptation planning, where quantitative models often exclude social and cultural variables. Pilot initiatives in Hungary and Slovakia have shown that including women in participatory water monitoring can enhance the quality and relevance of local planning, but these approaches remain limited and underfunded (GGCA/UNDP, 2011).

Subregional disparities may compound these gaps. Eastern and Southern Europe have experienced intensified drought cycles, with significant implications for smallholder agriculture. However, water adaptation initiatives often reinforce gender disparities. In the Mediterranean region, studies have shown that water-saving irrigation programmes disproportionately benefited male-led commercial farms, whereas women – often engaged in unpaid labour or small-scale farming – were excluded from consultation and financing mechanisms (Minoia, 2007). This reflects a broader trend in European rural policy, where eligibility for subsidies is frequently tied to land titles and formal membership in WUAs that are often male dominated.

Water is central to the often-invisible domain of care and domestic work, which is frequently performed by women across Europe. In addition, in countries such as Spain and Türkiye, women may be significantly more involved than men in household water-saving practices, recycling and adaptation to supply constraints (Tong et al., 2016; Granda et al., 2024). However, water policy and infrastructure design rarely account for this labour. Tariff systems and service quality reviews have typically treated households as neutral units, overlooking intra-household dynamics and the gendered costs of water collection, hygiene management and sanitation maintenance (Minoia, 2007). In rural Romania and parts of the Western Balkans, inadequate infrastructure has placed a disproportionate physical and emotional burden on women – particularly older women and those in households headed by women (Crider and Ray, 2022). The result is an enduring misalignment between public investment logic and the realities of how water is managed and valued in everyday life.

7.4.2 Towards inclusive water governance

Moving beyond structural gaps, inclusive water governance requires approaches that recognize gendered inequalities while actively creating opportunities for women's participation and leadership. Across Europe, emerging practices demonstrate how integrating gender perspectives into water

management can strengthen resilience and equity. For instance, in Albania, internationally supported watershed management projects have provided women with meaningful opportunities in monitoring, training and reforestation leadership (ADA/UNECE/GWP-Med, 2021). This has improved ecosystem resilience and gender equality, showing how integrated approaches can redress historical exclusions.

Water-related investments in Europe seldom apply gender-responsive budgeting or monitoring frameworks. As a result, projects may unintentionally widen inequalities by ignoring factors such as who benefits and who bears the costs. For instance, water infrastructure upgrades that increase household tariffs without progressive affordability measures may disproportionately affect female-headed and low-income households (Rachunok and Fletcher, 2023).

Austria presents a progressive example, where gender-responsive budgeting tools have been used in municipal water infrastructure planning. Disaggregated data can help policymakers identify and correct gender-based disparities in access, safety and public hygiene infrastructure – particularly benefiting older women and single-parent households (Minoia, 2007). Wider change may be achieved through transforming the institutional culture of water organizations and investing in gender-responsive human resources systems.

Tools like the Gender Responsive Assessment Scale – developed by WHO to evaluate gender integration in policies – and Austria's municipal budgeting reforms offer models for integrating gender equality into water finance, ensuring social and economic returns are achieved. However, these tools require political commitment, capacity-building and institutional incentives to be scaled across countries and sectors. Inclusive and adaptive water strategies may be achieved by recognizing the validity of multiple knowledge systems, including experiential and traditional knowledge held by women.

In this regard, the Equitable Access Score-card 2.0 (UNECE/WHO-Europe, 2024) provides a practical self-assessment tool developed under the Protocol on Water and Health. Applied in 15 countries, including recent assessments in Albania (from October 2023 to June 2024), Georgia (from December 2024 to September 2025) and Montenegro (from January to July 2023), it has helped governments collect sex-disaggregated data, identify gender-based inequalities in WASH and inform policy actions, such as improved school sanitation and menstrual hygiene initiatives. These examples demonstrate how structured monitoring instruments can catalyse policy reforms and gender-responsive actions in the water sector, offering practical guidance for other countries seeking to strengthen equality in WASH services.

7.4.3 Conclusions

Although Europe has achieved near-universal coverage in access to water supply and sanitation, gender-based disparities remain embedded in multiple dimensions of the water sector. Women are still under-represented in technical, managerial and policymaking roles in the water sector, despite notable progress in gender equality across European institutions. Structural barriers such as lack of mentorship, gendered job expectations and work–life imbalance can contribute to women's attrition and limited upward mobility.

Water-related investments in Europe seldom apply gender-responsive budgeting or monitoring frameworks

Such gender inequalities are not simply a result of technical gaps but rather stem from deep-rooted institutional and sociocultural blind spots in how water systems are conceptualized, governed and financed. The role of women in water-related labour – especially in domestic and caregiving contexts – continues to be undervalued and largely invisible in water planning and budgeting. Ensuring meaningful women's participation in decision-making mechanisms may be achieved through research and policy-making processes viewing women as active subjects.

A shift in how water governance integrates gender analysis may contribute to addressing these obstacles. Institutions could consistently collect and apply sex-disaggregated data in the design,

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implementation and monitoring of water policies. Valuing unpaid care and domestic labour within water service delivery systems and pricing frameworks could help to recognize the full economic contribution of women to water management. Women's experiential and place-based knowledge could be treated as a critical input in water decision-making – particularly in climate adaptation planning and disaster risk management.

By reflecting the intersectional realities of gender, age, ethnicity and economic status – which together determine levels of vulnerability to water-related hazards – risk assessments could aid inclusivity. The application of gender-responsive budgeting tools at the national and European levels may encourage water investments to promote technical efficiency, social equality and long-term sustainability.

Ultimately, water governance in Europe needs to evolve beyond its technocratic confines to reflect the lived realities of all those who depend on water – not only to advance gender equality, but also to strengthen resilience and ensure a truly sustainable future for people and ecosystems alike.

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7.5 Arab region

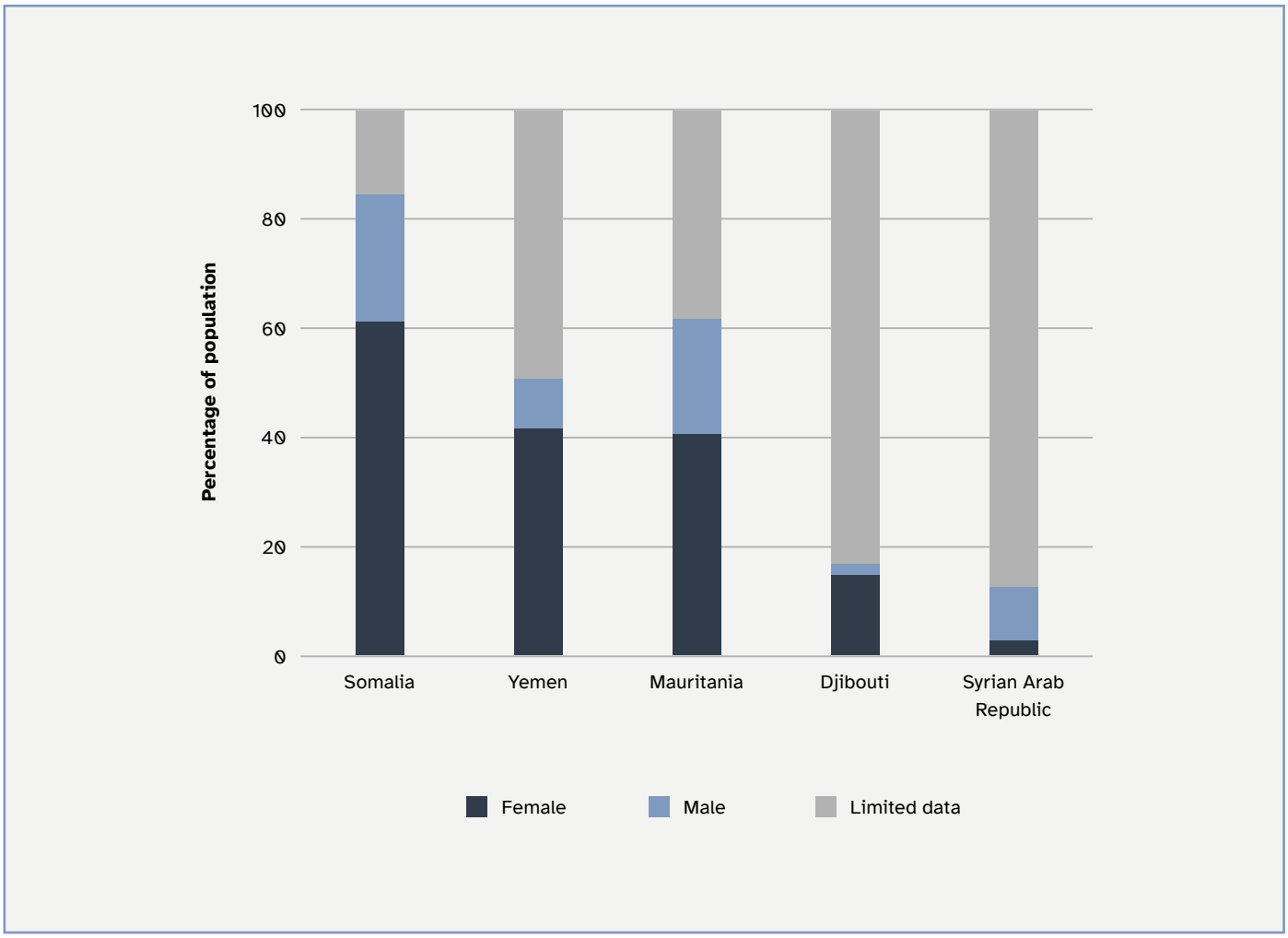
The Arab region is one of the most water-scarce regions globally, with 19 out of 22 Arab states meeting official definitions of water scarcity and 13 states meeting definitions of absolute water scarcity[19] (ESCWA, 2024). Additional crises can exacerbate the water challenge in the region, including climate change, conflict, and socio-economic and political upheaval. In 2017, the Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab Region projected the duration and frequency of droughts in the region would increase (ESCWA, 2017).

Women and girls frequently disproportionately shoulder the burden of these impacts because they may be vulnerable community members burdened by traditional gender roles. It has been estimated that 15% of schools in the Arab region have limited or no access to water, while 18% have limited or no access to basic sanitation services (WHO/UNICEF, n.d.). In times of water scarcity or when WASH infrastructure is unavailable or insufficient, adolescent girls may miss school if they lack the facilities to manage their menstrual cycle (see Chapter 2). Additionally, families may keep girls home from school in times of crises, such as drought and flooding, because they are expected to care for other younger children (UNICEF/Karama, 2023).

Water scarcity can also affect women's labour-force participation and economic empowerment. Around 14% of total female employment in the Arab region is in the agriculture sector, which is highly vulnerable to water scarcity (World Bank, n.d.). In several of the region's least developed countries (LDCs) and conflict-affected states, women are primarily responsible for water collection (Figure 7.6). As water scarcity intensifies, this task becomes increasingly time-consuming and dangerous, often requiring women to travel further to reach safe water supplies.

[19] 'Water scarcity' is defined as when annual renewable freshwater availability drops below 1,000 m^3 per person per year. 'Absolute water scarcity' is defined as when annual renewable freshwater availability falls below 500 m^3 per person per year (Falkenmark, 1989).

Figure 7.6 Primary responsibility for water collection in rural areas in selected Arab countries, by sex, 2015



Note: 'Limited data' reflects that water collection is an activity that does not apply to all households, and that data are unavailable for all households.

Source: ESCWA (2025, p. 2), based on data from UNICEF/WHO (2017).

7.5.1 Gender-related leadership, technical roles and mainstreaming trends

Despite the impact of water scarcity on women in the Arab region, they may not hold highly influential decision-making roles in water and sanitation utilities, often occupying a limited share of technical and leadership positions (Table 7.1).

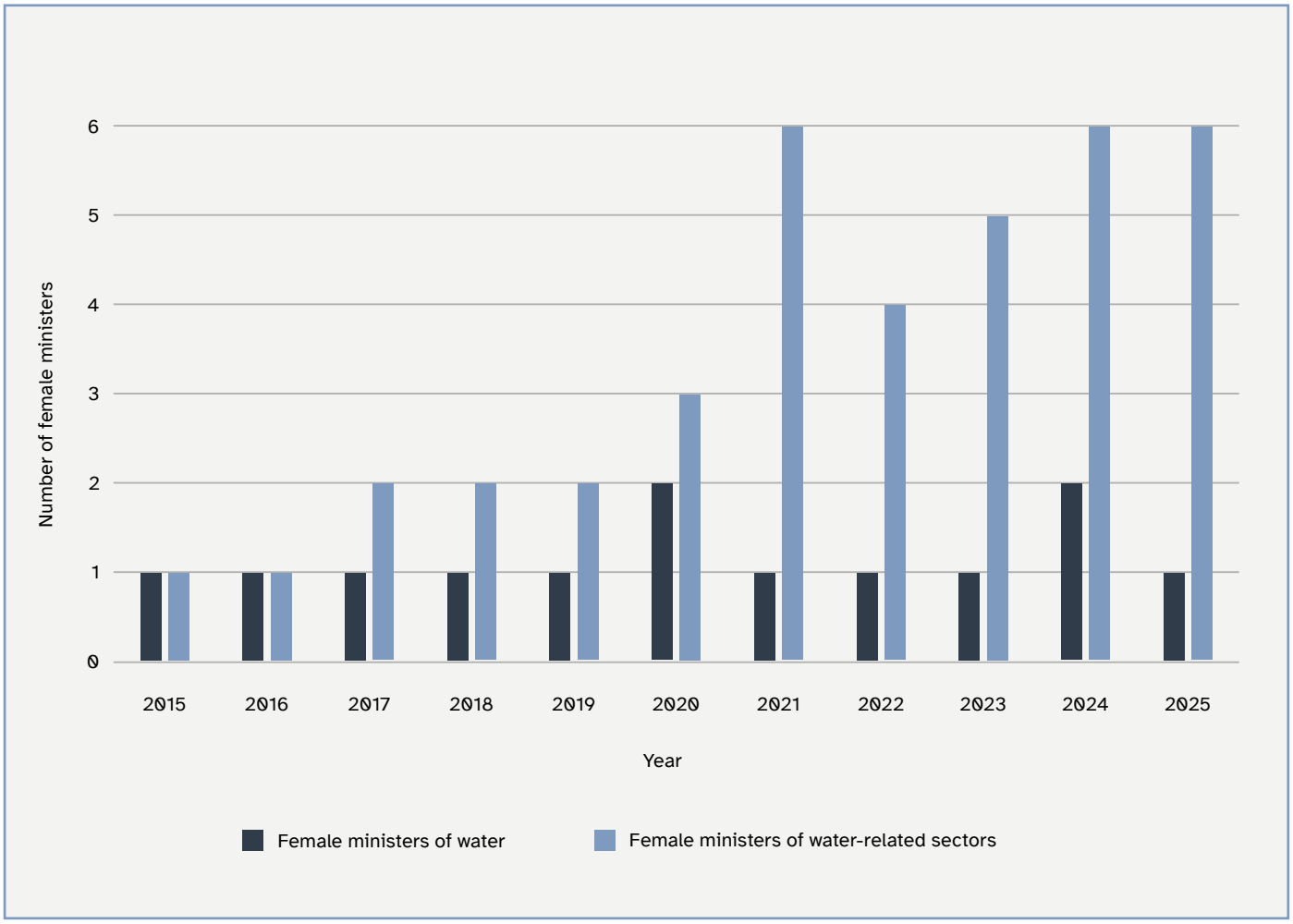
The number of women in political decision-making roles pertaining to the water and water-related sectors (including female ministers of water and water-related sectors) in the Arab region is limited but growing (Figure 7.7). The *2024 Progress Report on the Implementation of Integrated Water Resources Management in the Arab Region: Midterm Status of Sustainable Development Goal Indicator 6.5.1,* which included an analysis of 19 countries surveyed, found gender mainstreaming in IWRM was limited. Specifically, Arab states reported on the degree to which gender mainstreaming activities and outcomes in IWRM were achieved, reviewed and revised based on accountability mechanisms. While the Gulf Cooperation Council countries scored highly on gender mainstreaming components according to this self-reporting exercise, most other states in the region scored medium or low (Table 7.2). Some LDCs (e.g. Comoros, Djibouti, Somalia, Sudan and Yemen) scored particularly low (ESCWA/UNEP-DHI, 2025).

Table 7.1 Women in water and sanitation utilities in selected Arab countries, *circa* 2015

Percentage of women employees in water and sanitation utilities	Countries
0–9%	State of Palestine, Egypt
10–19%	Algeria, Tunisia
20–29%	Iraq

Source: Adapted from World Bank (2019, fig. 1.2, p. 5).

Figure 7.7 Number of female ministers of water and water-related sectors in the Arab region, 2015–2025



Notes: This clustered bar chart shows the prevalence of women in leadership positions within United Nations Economic and Social Commission for Western Asia Member States' water ministries and ministries that have some element of water governance/service provision within their remit. The numbers along the y-axis represent the number of female ministers that were in office for at least one month during the indicated year. The inclusion of data from 'water-related' sectors is necessary due to water in some countries being split between two ministries, for example: Morocco's Ministry of Equipment, Transport, Logistics and Water and the Ministry of Energy Transition and Sustainable Development (which encompasses Energy, Mines, Water and Environment); Oman's Ministry of Regional Municipalities and Water Resources and the Ministry of Agriculture, Fisheries and Water Resources; and the United Arab Emirates' Ministry of Energy and Infrastructure (which deals with Dams and Waterways) and the Ministry of Climate Change and Environment (which includes Marine Life and Green Development).

Sources: Authors, based on ministry websites, LinkedIn, Food and Agriculture Organization of the United Nations and news reports.

Table 7.2 Sustainable Development Goal Indicator 6.5.1 scores on gender mainstreaming in integrated water resources management (institutions and participation) in Arab subregions, 2023

	Gulf Cooperation Council	Maghreb	Mashreq	Southern	Arab region
Gender mainstreaming in integrated water resources management	**High (88)**	**Medium-high (60)**	**Medium-high (57)**	**Medium-low (40)**	**Medium-high (61)**

Note: 'High' refers to some sustainable water management objectives met (close to target); 'medium-high' refers to implementation started, but not always effective; and 'medium-low' refers to arrangements generally approved and institutionalized, but limited implementation.

Source: Adapted from ESCWA/UNEP-DHI (2025, table 5, p. 24).

Despite the challenges, there are many opportunities and efforts in the Arab region to promote the inclusion of women in leadership and decision-making roles in the water sector. Doing so may help to shed light on the differential impacts of water scarcity on women and to generate solutions to address this problem.

7.5.2 Inclusive policies and practices

There are several key components that may increase women's involvement in the water sector. Education and training can help to equip women and girls with the knowledge and skills necessary to make an impact. Gender mainstreaming policies can help to support women's insertion in the water sector at the national and subnational levels. Policies could facilitate the establishment of programmes and projects that create opportunities for women's involvement in the sector. Robust monitoring and reporting mechanisms – along with sharing of good practices, success stories and lessons learned – can guide future initiatives on women leading the water management and WASH sectors and participating in decision-making processes while breaking through gender stereotypes that may inhibit women's involvement.

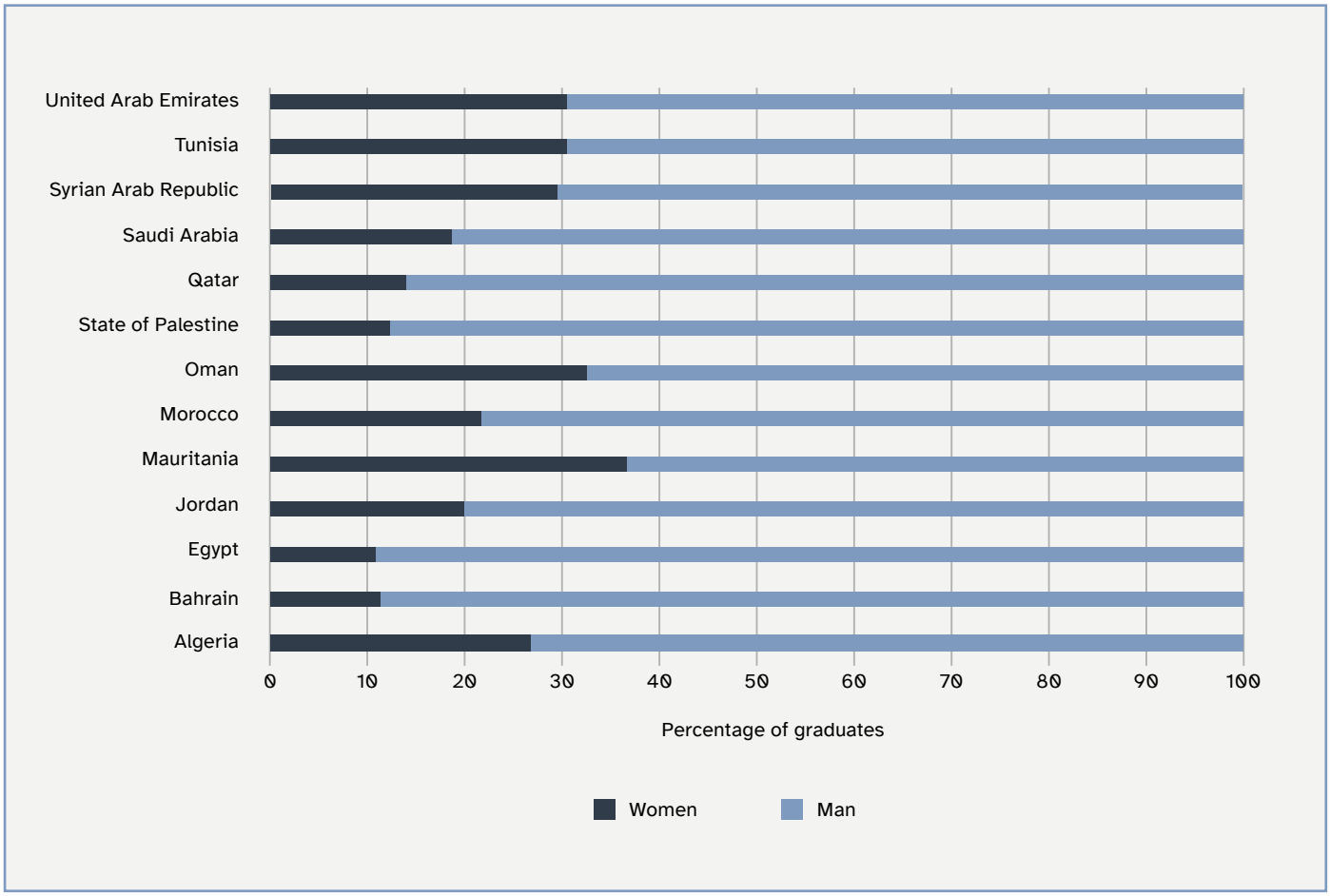
Capacity-building and training

In education, according to UNESCO data from 2020 to 2024 (UIS, n.d.), there are fewer women than men graduates in Arab states for STEM topics, which are the most relevant areas of study for the water management and WASH sectors (Figure 7.8).

According to a 2021 study, this low ratio of women in STEM education is mirrored in the workplace. In Jordan, women employees constituted 11% of the total employees in WRM and held 17.5% of leadership and supervision positions within the sector, with none reaching the decision-making level. In Morocco, the female employment rate in public services, including the water ministry, was around 34.5%. In the State of Palestine, the percentage of women employed in the public sector was 31.4%, with the upper-level management of water resources considered a male role while women were often seen as more suitable for administrative and desk work. In Egypt, although the number of women graduating from STEM was lower than that of Jordan and Morocco, 41% of the engineers in the Ministry of Water Resources and Irrigation were women, with 15% of these women engineers holding high-level positions (Afailal et al., 2021).

In Morocco, the H2O Maghreb capacity-development project, supported by the United States Agency for International Development, was implemented from 2017 to 2022 as a public–private development partnership established with the Government of Morocco, the National Office for Water and Electricity and other entities. The original goal of providing water-related training content to everyone was extended to focus on women's technical training for the water sector specifically. Of the 112 trainees enrolled in the H2O Maghreb project, 76% were women. Programme results showed 47% of the women participants found employment in the water management and WASH sector, compared with 50% of male participants (UNIDO, 2022).

Figure 7.8 Average percentage of graduates from science, technology, engineering and mathematics programmes in tertiary education, 2020–2024, by sex in the Arab region



Source: Authors, based on data from UIS (n.d.).

On a subnational scale, in Jordan, the Water Wise Women initiative – funded by the Deutsche Gesellschaft für Internationale Zusammenarbeit and implemented by the Jordanian Hashemite Fund for Human Development – provided more than 300 women in rural areas with training to empower their management of water resources at the household level and in relation to local civil servants. Women community leaders in the programme underwent intensive training covering topics ranging from WASH efficiencies, relationships between water uses and government and private sector providers, plumbing and water storage (Ibáñez Prieto, 2018). The plumbing training module aimed to help the participants save on water costs in their own home and to encourage them to use their new plumbing skills as an income-generating activity. Water Wise Women participants reported forming plumbing businesses with their spouses, as well as using the training to introduce new sustainable irrigation systems for their household gardens.[20]

National policies to promote women in water resources management

While training and capacity-building can help to empower women, national policies are also needed to translate education into action. In Morocco, gender provisions have been implemented into water laws and the National Water Plan. Law No. 36-15 mandated that at least one-quarter of the seats in key water governance bodies – including the Superior Council of Water and Climate, water basin councils and prefectural or provincial water commissions – be reserved for women (Kingdom of Morocco, 2016).

[20] Informed by the United Nations Economic and Social Commission for Western Asia and Deutsche Gesellschaft für Internationale Zusammenarbeit, personal communication, 19 May 2025.

In other states in the region, women are mentioned in national water policies, but clear paths for their inclusion have not been identified. For example, Saudi Arabia's Water Act under Saudi Vision 2030 – the national government programme for advancement and diversification economically and socially – restricts its mention of women to stating: "*Every woman has the right to obtain clean, safe water that meets the approved specifications*" (Kingdom of Saudi Arabia, 2016).

Some Arab nations are integrating women's empowerment into broader national development strategies, but without a specific focus on WRM. For example, the Oman Vision 2040, aimed at modernization, emphasizes the need for socio-economic empowerment programmes that support women. This includes providing financial assistance to Omani women's associations, which play a crucial role in fostering community development. However, despite these efforts, there are no specific provisions that directly promote women's participation in WRM (Sultanate of Oman, n.d.).

Similarly, Kuwait's Vision 2035, known as 'New Kuwait', emphasizes the empowerment of women as a key pillar of its development plan. The government aims to have women holding 35% of decision-making roles. Laws, international agreements and a political commitment to the role of women in society support the vision (UNDP, 2022). However, to truly assess the effectiveness of these initiatives, it is essential to monitor and report on their impact. This will help determine whether they have led to a meaningful increase in women's involvement in water management and identify any gaps or opportunities for further support.

Overall, while some progress in women's inclusion in WRM is evident in new policies and the growing number of women water leaders, studies from Jordan, Lebanon, Morocco and the State of Palestine voice common impediments and concerns with respect to gender obstacles. These include women's sentiments that gender stereotypes inhibit their participation in WRM, as evidenced by discriminatory questions asked in job interviews. Participants in earlier studies on women's inclusion in WRM indicated they felt greater anonymity (whereby reviewers have no knowledge of the applicant's gender – for example, derived from their name) in the initial stages of recruitment increased their likelihood of finding work in water management (UNIDO, 2022). Patriarchal societies where negative perceptions of female leadership prevail have been deeply entrenched in the region and require serious efforts on the part of policymakers and society as a whole to overcome (Carmi et al., 2019).

7.5.3 Conclusions

Water-related challenges in the Arab region are vast. They are multiplying in the face of climate change and compound crises such as conflict and socio-economic upheaval. In this environment, water scarcity and other water-related issues may disproportionately affect vulnerable community members such as women. Therefore, it is essential that women leaders play an active role in efforts to identify and give voice to the impact of water challenges on women and on building solutions.

While there have been some advances in women's inclusion in WRM, there is a need to build on the momentum. This may be achieved by disseminating success stories on women's roles within water management and continuing to encourage women's enrolment in engineering-related programmes. Establishing and implementing national policies that incentivize women's participation while closely monitoring the achievement of Arab states' visions and strategies for integrating women into water management over time are also important. Additionally, there is a need for sex-disaggregated data in water management and WASH to show the impact of water crises on women and girls and to monitor progress towards their inclusion in the sector.

Given the diverse social, political and economic contexts across Arab states, an approach that is sensitive to each country's specific circumstances may be more effective than a one-size-fits-all model. This is important considering the variation in women's economic status and access to resources across the region. While some countries have achieved notable milestones, others continue to face entrenched social norms that may limit women's participation. Solutions must therefore be holistic – integrating projects, training, policies, visions and assessment – while remaining flexible enough to adapt to each state's unique pace and realities.

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A common persistent obstacle is the existence of gender stereotypes, which may hinder women's enrolment in STEM education and their participation in water management positions. Multiple interventions could be used to overcome this, including more equitable hiring practices and programmes that increase women's influence in water management. This would show younger generations of women that change is possible and there is a place for them in the water resources and WASH sectors (UNIDO, 2022).

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Chapter 8

Data, education and capacity development

UNESCO WWAP
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With contributions from:
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Quality data, education and adequate capacities at multiple levels of decision-making are required to address gender inequalities in the water domain. Disaggregating data by significant dimensions of difference, including sex, permits the analysis of social inequalities in roles performed, costs borne and benefits enjoyed in water management and use. Closing the gender gap in education and capacity development can help to develop more sustainable water solutions, with potential social, economic and environmental benefits.

Data by sex are routinely collected in the labour-force participation, education, health and nutrition sectors. However, data on water access or water work are scarce, and when available are often collected and presented by household (Miletto et al., 2019; Caruso, 2023). Yet the household is a social unit with power imbalances within it. Household-level data do not say who has the right to water, how much labour goes into accessing and managing water, who does the work, who reaps the benefits and who uses the water for what purposes (Crider and Ray, 2022).

Collecting and presenting quality data on water access, allocation and management with sex disaggregation could lead to:

- More realistic cost–benefit analysis ratios and affordability ratios when evaluating a new water technology or water management system, because who decides what costs to pay and who pays it are intra-household decisions (Cherukumilli et al., 2023), where power imbalances may be unfavourable to women.

- More realistic estimates of the invisible, and disproportionately female, time burden of a water technology or treatment, so that technologies that alleviate unpaid work are promoted, and those that aggravate it are avoided; for example, so-called 'low-cost' technologies that may unintentionally add to unpaid work (Caruso et al., 2023).

- Better estimates of the benefits of more accessible and affordable water services because unacknowledged gender-specific costs of poor water services may lead to underinvestment in these services.

- Identifying opportunities to support women's participation and leadership, especially where women could contribute to more sustainable or productive use and management of water (Caruso and Sinharoy, 2019).

Therefore, there is a clear need to collect, analyse and utilize sex-disaggregated data water in water assessments and water statistics (FAO, n.d.a; UNESCO WWAP, n.d.). Consistent collection, analysis and dispensation of sex-disaggregated water data would counter deep-rooted assumptions that women's work is inherently of low value, or that household needs and women's needs are so inseparable that they need not be separately assessed (Nussbaum, 2001). These premises hinder both gender equality and sustainable water management.

Unrealistic assumptions and assessments lead to water policies and approaches that are not followed or sustained; many project failures attest to this undesirable outcome (De Wit et al., 2024). Undervaluing the contributions of all genders to water management can hinder efforts at developing gender-inclusive capacity and policy to manage water resources in communities, farms and utilities (Miletto et al., 2019; UNESCO WWAP, 2021). The central part played by women in managing water in the household and community has been formally acknowledged in multiple occasions, including the Dublin Principles of 1992 (ICWE, 1992), but their contributions remain undervalued.

This chapter summarizes ongoing efforts to collect sex-disaggregated data in the water domain and to use indicators to measure water access and use for drinking water, sanitation and hygiene (WASH) and water resources management (WRM) sectors. It discusses the human capacity needed to collect and analyse water data such that knowledge and practice can move towards greater gender equality. It also addresses the education and training that women need to participate meaningfully in water domain decisions, education and training for all genders on how to integrate women's needs, and the finances that could make more such initiatives possible.

8.1 Data, information and analysis

Data gaps in the WASH as well as the WRM sectors have made it challenging to count all the costs and all the benefits of poor as well as improved water services. In the WASH sector, particularly significant sex-specific gaps include: (a) the time and opportunity costs of water work (collecting, storing, treating, rationing) (Cherukumilli et al., 2023); (b) the time needed for non-water household work (this constrains what additional time is viable with respect to new water initiatives); (c) occupational health costs of hauling water, such as musculoskeletal distress (Geere et al., 2018); and (d) mental health costs – including interpersonal conflicts (Wutich and Ragsdale, 2008; Bisung and Elliott, 2017) – of insecure water services. Underestimated benefits can lead to underestimation of the social benefit–cost ratio from investing in reliable water services.

Case studies from several countries attest to the benefits of disaggregating data to acknowledge better WASH services provision. For example, in rural Zambia, access to reliable piped services has given women more time to produce food in their kitchen gardens (Winter et al., 2021). In Brazil, women reported their saved time allowed them to rest more and to care for their children (Silva et al., 2020). Evidence from Ghana showed girls' school attendance increased measurably with reduced water fetching (Nauges and Strand, 2017).

The WRM sector, dominated by agricultural water use, has its most significant data gaps in accounting for women's agricultural labour and reliable access to irrigation. Women may not have access to formal water rights, as such rights are often bundled with land rights (see Chapter 3). Furthermore, data on female farm labour are limited because they are usually derived from household surveys – most women farmers work within household-level production units, thus masking their specific activities in conventional data collection. By disaggregating agricultural yields by men's and women's separately worked plots, a 2016 study estimated yield gap averages of 20% to 30% in low- and middle-income countries (LMICs) (FAO, 2016). However, in 'dual' farming systems, where women constitute a significant fraction of decision-makers, there is evidence of higher productivity when water and other resources are shared equitably (Van Koppen, 2001; Van Koppen and Hussain, 2007). It is, however, relevant to consider that the way intra-household productivity is measured (e.g. by single or multiple crops, by farm or by plot or by labour productivity) can influence gender-related outcomes (Doss, 2025).

Case studies from several countries attest to the benefits of disaggregating data to acknowledge better WASH services provision

Sex-disaggregated data in WRM can bring policy focus to women-managed farms, equitable tenure and water rights arrangements, and the participation of men and women in producers' cooperatives and water user associations (GEF, 2018; Imburgia et al., 2020a). Sex-disaggregated data can guide financing and new initiatives to where they are most needed, or to where they are likely to benefit more people and communities.

8.1.1 Indicators for sex-disaggregated data

Widely used instruments such as multiple indicator cluster surveys by the United Nations Children's Fund (UNICEF) and demographic and health surveys continue to report WASH access (or cost) data mainly at the household level, even when they include questions on fetching water and who fetches it. Recent initiatives at collecting nuanced data on domestic water insecurity also ask questions on behalf of the household (e.g. "*did you or anyone in your household…?*") (Young et al., 2019).

Nevertheless, the recognition of the importance of data collection by sex is on an upward trajectory, together with the tools and methods to facilitate it. Within the WASH sector, new survey research supported by the World Health Organization (WHO)/ UNICEF Joint Monitoring Programme includes sex-

specific instruments, with new priority indicators on time, labour and risks of fetching water, and water available for menstrual hygiene, specifically by sex and age (WHO/UNICEF, 2025). Very short, sanitation-only and separate questions for men and women have also been proposed and tested (Akter et al., 2025). These and similar indicators can be modified for use in many socio-economic circumstances.

However, some areas of women's water work remain underinvestigated. For example, while fetching water is a well-known hardship, for which data exist, storing and treating water at home (from an intermittently running tap or post-fetching) is also time-consuming. Low-cost drinking water technologies are regularly promoted without a sense of who in the household is responsible for payment (and budgeting), or the household's other basic needs. These intra-household data are, of course, more challenging to collect than the time to fetch water, which can be easier to observe, for example, at the point of collection.

For WRM and gender, United Nations agencies have developed multiple tools for data collection and have validated them within case studies in Africa, Asia and Latin America. For example, through AQUASTAT, the Food and Agriculture Organization of the United Nations (FAO) presents statistical data and case studies on the gender division of labour and access in irrigation systems globally (FAO, n.d.b). The United Nations Department of Economic and Social Affairs has proposed a minimum set of gender-sensitive indicators for country-level data (DESA, 2020).

The United Nations Educational, Scientific and Cultural Organization (UNESCO) World Water Assessment Programme (WWAP) has developed comprehensive data management tools, such as the *UNESCO WWAP Toolkit on Sex-Disaggregated Water Data* and gender-responsive indicators (Miletto et al., 2019), applicable to a wide range of development areas (Box 8.1). UNESCO WWAP has implemented these analytical approaches to assess, document and highlight women's water access and use (Imburgia, 2024), as well as participation in water management and governance (Imburgia et al., 2020b; 2025a; 2025b).

Box 8.1 Fostering sex-disaggregated data collection and capacity development through international cooperation

In response to the need for sex-disaggregated water data and to strengthen capacities on its collection and use, UNESCO WWAP has led intensive training projects focused on the collection and analysis of disaggregated water data and the use of gender-responsive indicators (UNESCO WWAP, n.d.), translating data into gender-transformative policies, and implementing 'learning-by-doing' analyses linking water, climate, gender and livelihoods.

For example, the design and implementation of training and field water assessments on the participation of women in agricultural water management in Belize and Jamaica uncovered the specific constraints that women face due to irregular land tenure in Jamaica, and the improvements observed in water management when women have a leadership role in water user associations in Belize (UNESCO, 2023a; 2023b). Studies on the differentiated impacts of climate variability on women's and men's access to and management of water resources generated new sex-disaggregated data and provided practical tools for advancing gender equality in climate-vulnerable water contexts in South and Central America (Imburgia et al., 2025a) and in the Pacific small island developing states (Imburgia et al., 2025b). In the latter, by using the UNESCO WWAP gender-responsive indicators, the Water Authority of Fiji and the Fiji Meteorological Service jointly analysed for the first time sex-disaggregated water data from field surveys alongside national rainfall datasets. The study yielded critical recommendations aimed at enhancing the country's national training programme on rainwater management.

The UN-Water Integrated Monitoring Initiative for Sustainable Development Goal 6 framework on gender indicators and related tools have been developed and piloted to help contextualize gender dimensions within the monitoring and reporting of this Goal (UN-Water, 2023). Research by the International Water Management Institute has pioneered data-collection methods that distinguish between women irrigators with decision-making power versus women who perform labour on family farms, and on indicators of benefit-sharing between men and women in irrigated agriculture (Merrey and Lefore, 2018).

Beyond water, indicators of women's agency and leadership in other sectors can be useful in guiding data collection for WRM. The water domain can learn from, and modify, sex-specific information acquisition tools in WRM-adjacent sectors such as agriculture and nutrition (Alkire et al., 2013).

Two practical considerations should guide data analysis and indicator development. First, the viability of additional data collection and survey implementation is as important for indicator development as it is for data gaps. Indicator development for gender inclusion is a trade-off between tractability and comprehensiveness. Long and complex indicator sets capture gender dynamics well, but a parsimonious set of indicators is more likely to be consistently used in low-resource settings. Second, much gender–water work is documented in small-scale case studies from highly varied geographical and socio-economic sites, so comparison and generalization for indicator development are challenging. Well-known examples of distilling common 'design principles' from multiple case studies can serve as road maps for deriving broad principles for, and from, data collection and analysis on women and water (Ostrom, 1990). Building skills for sex-disaggregated data collection and analysis, especially for uncovering 'hidden' data from domestic and small-farm sectors, could be achieved through investments in education, training and capacity-development initiatives.

8.2 Education, training and capacity development

All genders should have equal opportunities to participate in decision-making roles in water management and governance. Women's leadership in water management can promote gender equality and bring new perspectives to a field where women professionals remain a minority in most countries (World Bank, 2019). Training and capacity development are therefore needed by all, so women can participate as leaders and decision-makers in educational, professional and political institutions. Women's capacity development and the erosion of norms that hinder their capacity are inherently parallel efforts.

8.2.1 Formal educational sector

The formal education sector means institutionalized schooling (primary, secondary and tertiary), in which basic skills are developed according to standardized criteria. While most countries have made much progress in enrolling girls and boys in primary and secondary school, girls overall still lag behind boys in secondary school completion rates in low-income regions (36% versus 41% in South Asia; 25% versus 31% in Sub-Saharan Africa, in 2022) (Sosale et al., 2023; UNESCO GEM Report/UIS, 2024). Fields most relevant to water management such as engineering, economics or agricultural sciences are specializations mainly beyond secondary schooling. Yet, for 87% of countries reporting data on science, technology, engineering and mathematics (STEM) enrolment, gender gaps in STEM fields had already emerged by secondary school (Straza, 2024). The low participation of women in water management and water governance is at least partly due to their low levels of training for technical and leadership positions in the sector (UNESCO WWAP, 2021); women enrolled in STEM fields are less likely to engage in engineering, manufacturing and construction than men (Straza, 2024). For example, in Argentina, a 2020 national study identified that 65% of enrolled students and 67% of graduates from university careers directly linked to water resources processes and infrastructure, including hydrology, hydraulic engineering, civil engineering and agricultural sciences were men (Imburgia et al., 2020b).

Secondary school completion is essential for a strong foundation in STEM education. There is also evidence that secondary school completion is important for a sense of confidence and knowledge of one's rights (Unterhalter, 2012). In many countries, negative stereotypes act as barriers for women who pursue STEM or science-based careers. Research has shown that keeping adolescent girls in school and increasing opportunities for educated girls can be mutually reinforcing: girls are more likely to complete secondary school when it brings new opportunities, and more opportunities (in water careers and beyond) are available when upper-secondary school is completed. Observational studies have also suggested more accessible water infrastructure in schools and communities is associated with improved enrolment for children (Koolwal and Van de Walle, 2013), particularly girls.

Beyond secondary school, tertiary-level enrolment in STEM fields has been low relative to job market needs in many countries (IWA, 2014). A smaller share of working-age women than men is enrolled in, or working in, STEM fields globally. This disparity is heightened in regions such as South Asia where women's participation in the formal workforce is low in general (Sosale et al., 2023). Nonetheless, as with secondary education, efforts to increase women's opportunities in the workplace and the number of women enrolled in STEM fields in tertiary education can be mutually reinforcing (Özler, 2015). Efforts to promote women in STEM education (such as scholarships), making workplace opportunities more open to all genders and combating biases that discourage women from pursuing STEM are pathways for bringing more women professionals into water governance (World Bank, n.d.).

8.2.2 Technical and vocational education and training

Institutionalized technical and vocational education and training (TVET) can play an important role for capacity development outside the conventional education system. TVET efforts and certification can bridge the gaps between the skillsets needed to operate water and wastewater systems and the workforce needed to supply those skills. However, many of these initiatives are yet to fully incorporate gender mainstreaming, because TVET initiatives are widely seen as intended for men (Bray-Collins et al., 2022). Positive examples from Cameroon and Sierra Leone show that when TVET programmes are designed to address technical training and also self-confidence, time management and the ability to challenge discrimination, they can break through long-standing barriers to gender equality in employment (Wignall et al., 2023). Similarly, in Mexico, systematic training and support to women as managers and technical officers in water utilities is proving effective in rapidly increasing the number of women involved in field water jobs (ANEAS, n.d.). In 2023, the Asociación Nacional de Entidades de Agua y Saneamiento (ANEAS) trained 5,554 women water officers from the water utilities of Mexico (33% of the total participants), and in 2024, this number grew to 9,675 (40% of the total participants).[21]

8.2.3 Practical training

Non-formal but structured training on water-related matters can enable equitable access to information and capacity development for water users and can be designed specifically for women. These educational initiatives are most effectively designed as two-way processes: (a) knowledge on water and water management is made available in user-friendly forms and (b) trainers and facilitators learn from the women who manage household or on-farm water so their tacit knowledge and experiential knowledge are recognized (FAO, 2016; GEF, 2018).

Conducting practical training and capacity development in local languages, where appropriate, can be beneficial because local-language literacy and education may be necessary for community-based sustainable development efforts (Trudell, 2009; 2010). Knowledge, training and skill development with women's active engagement has several advantages: divisions of labour may generate divisions of knowledge, and women's knowledge can be made visible; relevant and usable capacity is more likely to be developed in this way; and power imbalances can be alleviated (Biancardi Aleu et al., 2022). In addi-

[21] Informed by ANEAS Director-General, personal communication, July 2025.

tion, women being trained and educated will likely be committed to the training from the start, despite the inevitable and additional time commitment.

Many non-governmental organizations (NGOs) around the world – international as well as national/regional – work on education and capacity development for water users and (unofficial and official) managers within a framework of gender equality (GRAVIS, 2017; CSE, n.d.; Mvula Trust, n.d.; Sukrya, n.d.; Tsogang Water and Sanitation, n.d.).

The much-needed reform of public agricultural extension and advisory services for smallholder farmers (many of whom are women) requires, among other things: adapting its institutional arrangements to current needs; establishing efficient and sustainable financing mechanisms; strengthening human capacities; and fostering various forms of public–private partnerships, while ensuring enabling policies (Yang and Ou, 2022). These reforms are particularly important in regions such as northern and southern Africa, the Caribbean, and eastern and southern Asia, where such services are the dominant form.

In such forms of continuing education and training, outreach with local and regional government officials – while sometimes difficult and frustrating – is necessary. First, NGOs may not be given effective autonomy from the government in many LMICs. Second, the scale-up of continuing education and practical training in WASH or WRM ultimately depends on local governments accepting and 'owning' these initiatives. Third, the consistent incorporation of gender mainstreaming into water policies requires a legally binding context, which non-state actors cannot provide.

8.2.4 Continuing professional development

Historically, countries have only achieved near-universal WASH services and reliable irrigation services (albeit with variations in service quality and access) with professionalized and regulated water sectors (Ray and Smith, 2021). While there will be a constructive role for households, entrepreneurs, communities and independent providers for years to come, the growth of professionalized water utilities and WRM agencies is a step towards universal and reliable services. In the past, water utilities have had mainly male employees; while this is changing, it remains true, even in high-income countries (World Bank, 2019; see Chapter 4). Correcting this imbalance to serve gender equality and (potentially) better water management can be achieved through continued professional development for women employees, and also for managers of all genders.

Equitable access to leadership and entrepreneurial skills training within water agencies is a slow process, but many examples demonstrate the positive outcomes that targeted efforts can achieve. For instance, UNESCO WWAP has been active in collaborations with: Manila Water, which has received recognition for its gender parity at senior management levels (Escosio, 2025); ANEAS Mexico to increase the representation of women leaders in the water sector (UNESCO, n.d.); and the Brazilian water agency, which has programmes to ensure that women's perspectives are included in planning and decision-making in water services (ANA, n.d.). The Women in Water & Sanitation Network in South Africa is building women-driven efforts within water and sanitation utilities (IWA, n.d.). The National Association of Regulatory Utility Commissions (United States of America), with support from the United States Agency for International Development (USAID), has worked extensively with LMIC utilities to incorporate gender-specific considerations in policy and regulatory frameworks (NARUC, n.d.).

Ongoing professional development of senior managerial staff of all genders could help to improve the low representation of women in water services. In some countries, barriers to women's professional development in WASH and irrigation agencies include stereotypes that women fit better for administrative tasks and men cannot have a woman supervisor, sexual harassment that goes unchecked, or the lack of safe toilets at construction sites and field study sites (Burt et al., 2020; Ambassa and Bidiasse, 2025). Emphasizing the importance of hiring qualified women and creating workplace facilities and expectations that are conducive to gender equality could improve water agency leadership.

8.3 Financing data collection, training and capacity development

Collecting sex-disaggregated data, conducting training and professional development, and promoting capacity-development initiatives towards gender equality in the water domain require targeted resources. These aspects are rarely budgeted for in water projects and planning. In fact, international donors routinely demand local capacity-building activities and gender-sensitive monitoring and evaluation systems for water projects but allocate little time and money for them. Needs often run ahead of financial capacity, but financing the provision of information, education and training needed for gender parity in the water domain is crucial.

Collecting sex-disaggregated data, conducting training and professional development, and promoting capacity-development initiatives towards gender equality in the water domain require targeted resources

Mobilization of international assistance and targeting scarce public funding with gender equality as a guiding principle are of key importance. Prioritizing which of the action items discussed above will have lasting impact and the most spillover effects is also of key importance. While Chapter 10 covers the broader dimensions of funding, this section focuses on finance, specifically for education, training and capacity development.

8.3.1 Sources of internal and external funding

Direct (central or local) government financing, through taxes and bonds (if debt ratings allow), is the commonly used method of financing education and capacity development. Where the tax/gross domestic product ratio is low (under 10%), the tax base may need to be raised, which is politically and/or financially difficult, especially for poor countries. Taxes may also be redirected towards the funding of gender parity initiatives in WASH and WRM. Non-tax options could include: debt forgiveness; development assistance (e.g. from FAO, UNICEF or WHO) specifically set aside towards capacity development, data collection (e.g. demographic and health surveys financed by USAID) and training for women; or a version of the 'billionaire wealth tax' promoted by influential economists (Saez and Zucman, 2019), because water sector improvements are often a form of adaptation to climate change. For external development assistance, grants are preferable to loans because, if social services are cut to repay national debts, women's unpaid work burdens tend to increase.

8.3.2 Funding priorities

Setting funding priorities in development means allocating scarce public resources effectively and equitably, in accordance with human rights conventions, labour laws and environmental laws. As everything cannot be financed at once, funding for data collection and capacity development could guide and prioritize those activities with the highest impact per investment; guide policies for government agencies, NGOs, the private sector and citizens; and have benefits beyond the water sector. Potential priorities include: financing in-country training and skills-building to collect and use sex-specific data; providing STEM training geared towards girls, women and under-represented groups, to expand opportunities to participate in professional capacity; and awarding designated small grants for capacity development in women- and community-led initiatives, especially in low-income and rural settings (Schalatek and Nakhooda, 2015).

8.3.3 Examples of gender-responsive funding initiatives

Data collection, and education and training initiatives for gender equality are necessary on their own terms. They would also enable more accurate estimates of the costs and benefits of labour and technologies, and (potentially) enable more representative and responsive water management. Although data

collection and capacity development are generally under-financed, positive examples exist as proofs of concept.

The Green Climate Fund was one of the first international efforts to mainstream gender inclusivity and gender assessment as a requirement for all its adaptation projects (GCF, n.d.). The Global Environment Facility's policy on gender assessment for all its projects necessarily includes data collection and capacity development (GEF, 2018). Acknowledging that progress has been uneven, GEF is reinforcing the requirements for using gender-responsive indicators and strengthening skills of project managers to implement gender integration approaches across the project cycle (GEF IW:LEARN/UNESCO WWAP, forthcoming).

The results of UNESCO WWAP's training programmes to support countries in their efforts to collect and use sex-disaggregated water data (Box 8.1) were achieved through partnerships forged through cooperation with international funding agencies and Member States institutions, including the Sustainable Joint Fund, the Asian Development Bank and the Ministry for Ecological Transition and Demographic Challenge of Spain.

The global network Community of Women in Water strengthens the capacity and skills of women to work as WASH professionals in rural and urban settings globally, in partnership with Latin American, European and African organizations (CWIW, n.d.). The non-profit organization Green Empowerment works in the Latin America and Caribbean region to promote leadership roles in rural community-based water and energy programmes. Its training programmes build on the traditional knowledge of Indigenous Peoples and women (Green Empowerment, n.d.). Although such initiatives are necessary, they are not sufficient conditions for women's success as water managers and policymakers (see Chapter 9). As more such initiatives come online, more data can be gleaned from their case studies on priority actions for financing gender inclusivity in water management at all levels.

8.4 Conclusions

Gender equality in water access and management, data on progress in gender equality, and the relevant education and capacity development needed for equality are essential for improving the lives of women and men globally and for achieving sustainable development well beyond the water domain.

The call for sex-disaggregated data in the water world is not new. Disaggregated data are routinely collected in other sectors, but methods of accounting for women's undervalued time, even when they exist, remain underutilized. At best, gender data gaps are a missed opportunity to alleviate gender disparities in the water domain. At worst, they allow the 'free' labour of women to be taken for granted by communities, and also by researchers, donors and policymakers who continue to design and promote water technologies mislabelled as 'low cost', when in reality, once concomitant labour costs are considered, these are actually 'high-cost' water technologies.

Developing skills and in-country capacity to monitor and evaluate water programmes through a gender lens is essential for more equitable and more effective water management

Developing skills and in-country capacity to monitor and evaluate water programmes through a gender lens is essential for more equitable and more effective water management. Training women, through more equal access to STEM fields and professional opportunities, can make them stakeholders and leaders in knowledge generation and in water management decisions at all scales. Skills development (and certification) are needed to counter women's over-representation in low-value and underpaid water work and under-representation in decision-making and higher-paid positions.

Traditionally, states have been the primary duty bearers in this capacity-development role, but significant technical, managerial and financial support may be needed from the private sector and civil society partnerships. Internal and external finances, guided by principles of sustainability and equality in access and management, can help to smooth the path towards a more equitable and efficient water domain.

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Chapter 9

Governance

UN Women
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Promoting gender equality[22] and women's full, equal and meaningful participation[23] and leadership in water governance

Water governance refers to the "*political, social, economic, and administrative systems that influence water's use and management*" (SIWI, n.d.). It has direct bearing on the realization of the human right to water, advancing equality of access and achieving sustainability for present and future generations.

International normative and human rights frameworks have contextualized the primordial importance of water governance. These include the Universal Declaration of Human Rights, the General Assembly of the United Nations resolutions on the human rights to water and sanitation (General Assembly of the United Nations, 2010) and safe drinking water and sanitation (General Assembly of the United Nations, 2015a). Others with specific reference to gender equality include the Convention on the Elimination of All Forms of Discrimination against Women (General Assembly of the United Nations, 1979), the Dublin Statement on Water and Sustainable Development (ICWE, 1992), the Beijing Declaration and Platform for Action (FWCW, 1995) and the 2030 Agenda for Sustainable Development Goals (SDGs; General Assembly of the United Nations, 2015b), incorporating the mutually reinforcing intersections between SDG 5 and SDG 6.

Governance of water resources, access, distribution, services and provisioning has profound implications for people's rights, resilience, livelihoods, health and well-being, and for sustainable development as a whole. This is particularly true for women, girls, gender-diverse people and their households and communities (ECOSOC, 2022; 2025; General Assembly of the United Nations, 2023; UN Women, 2023a).

For decades, there have been calls for gender mainstreaming in water management and decision-making, amid evidence that women's participation is pivotal for effective and sustainable water projects and enhancing local water governance (Jalal, 2014; UN Women, 2014; Jenniskens, 2022; UNEP-DHI/GWP/UN Women, 2025). However, there are stark gender gaps in water governance, leadership and financing at national, municipal and local levels, in government, public and private water utilities, and in water management and user groups (see Chapters 3 and 4).

International normative and human rights frameworks have contextualized the primordial importance of water governance

Although the share of the global population with safely managed drinking water increased from 69% in 2015 to 73% by 2022, 1.8 billion people still lack drinking water on premises, with women and girls responsible for water provisioning in two-thirds of households (United Nations, 2024). Women and girls spend 250 million hours per day on water collection, over three times more than men and boys, in 53 countries with available data (UN Women, 2024a). This points to the ongoing failure of water governance to reach everyone – particularly marginalized communities with inadequate resources, services and infrastructure. Women and girls often shoulder the responsibility for water provisioning and management in such contexts. Women's rights to and control over water resources and access to and benefits from water often remain unrealized. Recognized gender gaps separate the realization of water rights and everyday water responsibilities (Acevedo-Guerrero et al., 2024).

Gender mainstreaming and the incorporation of women and other marginalized groups into water governance can be far from the norm (Acevedo-

[22] For discussions of gender equality, gender mainstreaming, gender-responsive, gender-diverse and other gender terms and principles, please see UN Women (2022a).

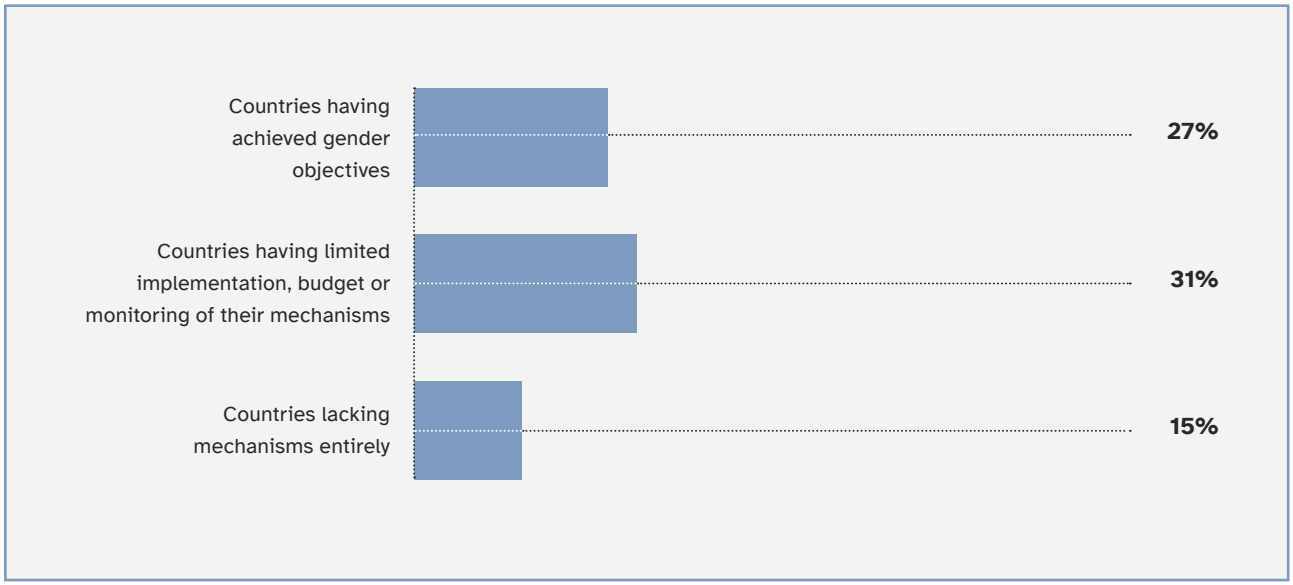
[23] This is agreed language by United Nations Member States found in numerous United Nations resolutions and outcome documents, and based on the Beijing Declaration and Platform for Action.

Guerrero et al., 2024), even though water has been designated "*women's business*" in many developing countries (Jalal, 2014). To assess the status of gender mainstreaming in water resources management laws, policies, plans or strategies, an SDG Indicator 6.5.1 survey showed global average scores increased from 54% to 58% of the countries surveyed between 2020 and 2023. However, only 27% of the countries reported achieving gender objectives, while 15% lacked any gender mainstreaming mechanisms and 31% had limited implementation, budget or monitoring of their gender mainstreaming mechanisms in 2023 (UNEP-DHI/GWP/UN Women, 2025; Figure 9.1).

When women and youth do participate in water governance, it can often be 'tokenistic'. There may be perfunctory or symbolic inclusion in meetings and consultations and reporting their presence, without consideration of their mobility constraints, unpaid care and domestic work responsibilities, or whether they actively participate or influence decisions or policies (Eaton et al., 2021; Dickin and Caretta, 2022; Singaraju et al., 2025).

This chapter proffers the argument for a feminist approach to water governance, as notably advanced by UN Women (2023a). It recognizes the significance of women and girls in neighbourhoods and communities in water provisioning and management, and also that the absence of women in water governance can jeopardize management, sustainability and equality of use and benefits across economies and societies. Feminist water governance[24] calls for women's equal and commensurate participation in decision-making and policymaking and leadership in the water sector at all levels. It highlights the interlinkages between women's rights, gender equality, overall equity, sustainability, and clean water and sanitation (i.e. between SDGs 5 and 6). For this, water policies and institutions, as well as professional structures and practices, need to be transformed (Zwarteveen, 2017; UN Women, 2023a; Joshi and Nicol, 2024).

Figure 9.1 Implementation level of gender mainstreaming in water resources management by countries, 2023



Source: Based on UNEP-DHI (n.d.).

[24] This usage is aligned with "*feminist foreign policy*", adopted over the past decade by several governments (UN Women, 2022b) and "*feminist climate justice*", adopted by feminist scholars and activists, among other stakeholders (UN Women, 2023b).

9.1 Challenges in feminist water governance

SDG 6 country acceleration case studies from Bhutan, Brazil, Czechia, Ghana, Jordan, Rwanda, Saudi Arabia and Singapore, among others, have indicated effective water governance necessitates several enabling conditions. These include a high degree of political will and commitment, sound legal, policy and institutional frameworks, and municipal and local awareness and tradition of integrated water resources management (IWRM) and drinking water, sanitation and hygiene (WASH) management. However, gender considerations were not included in the analyses (UN-Water, n.d.).

Many countries have undertaken legal, policy and institutional reforms to allow for greater participation and decentralization of decision-making based on the principle of subsidiarity. Following this principle, the people who rely on and use water resources should be involved in their governance at the most immediate or lowest appropriate level. This includes sustainable water use and service provision to and by local communities and authorities, public and private water user groups and civil society organizations. Implementation of such an approach requires adequate, targeted financing (see Chapter 10) and capacity development, effective regulation, and accountability measures to guarantee enforcement and mitigate corruption (SIWI, n.d.). Countries that have undertaken such reforms include Bosnia and Herzegovina, Cambodia, Lao People's Democratic Republic and Jordan (SIWI, 2023), as well as Argentina, Brazil, Kingdom of the Netherlands, South Africa and Tunisia (OECD, 2023), yet with scant or no reference to women, gender equality or gender mainstreaming.

Feminist water governance could help to address the systemic gender disparities in water governance – in laws, policies, institutions and practices. These gender inequalities may be rooted in historically extractive economies that treat water as an unlimited commodity for profit rather than a precious common good to be used carefully and sustainably for the benefit of all people and the planet.

Unequal power relations between men and women and unequal and gendered divisions of labour in households, communities and across societies and economies may compound extractivism (Mies, 1986; Mellor, 1997; Salleh, 1997). Whereas many water provisioning and management responsibilities fall on women and girls, men often hold and exercise significantly greater rights and power in water governance at all levels. Men's expertise and knowledge may be recognized, and their dominance in positions of authority and decision-making can remain unquestioned (normalized and naturalized) (Liebrand and Udas, 2017).

Feminist water governance can be underpinned by concerns of epistemic justice, that is: whose knowledge shapes laws, policies, institutions and management practices in the water domain and whose knowledge, language and expertise are considered valid and important? In many contexts, these may be implicitly and explicitly masculine and technocratic. Men may be assumed to be the repository and agents of knowledge and practice. Water discourses and institutions can thus be masculinized (UN Women, 2014; 2023a; Zwarteveen, 2017; Zwarteveen and Rap, 2017; Joshi et al., 2024). Moreover, such gendered hierarchies may be interwoven in different contexts with inequalities of class, race, ethnicity, age, sexuality and ability, leading to multiple and intersecting forms of discrimination that women may contend with in water governance. For example, data gathered between 2011 and 2021 from 93 low- and middle-income countries (LMICs) show women and girls in the poorest rural households have lower access to water compared to national averages and to women in the richest urban households. When discrimination based on income and location is compounded for women and girls in Indigenous, ethnic or minority communities, their access to water is even more limited (UN Women, 2023a). These are complex situations that can help to inform water governance.

SDG Indicator 6.5.1 survey responses indicated that insufficient political will and accountability of duty bearers, as well as meagre gender-responsive financing, capacity and training (see Chapters 8 and 10), have weakened gender mainstreaming in water frameworks. Significant under-representation of women in technical and decision-making roles

and the lack of gender and intersectional data can impede evidence-based and gender-responsive policymaking and monitoring (UNEP-DHI/GWP/UN Women, 2025).

While most national water plans and policies have aimed to reach women and girls, in 2021/2022, less than half were found to have the monitoring measures and less than a quarter the financing to provide services (WHO, 2022). This can be referred to as the 'mainstreaming fallacy', whereby limited or no resources are provided to promote gender transformation of the water sector, and gender mainstreaming is treated as an incidental issue that does not require additional resources in terms of funding, time, effort and knowledge (Ndjiki et al., 2023).

Even when gender considerations have been incorporated into national water frameworks, this does not necessarily translate to gender-responsive water governance at local levels. For example, low levels of women's leadership in irrigation water user associations (WUAs) have been linked to ineffective management, weak equity, lack of sustainability and low levels of rootedness in the community (Imburgia et al., 2020). Moreover, rights to water and land can often be tied in such a way that women may be precluded from participating in WUAs and decision-making unless they hold title to, or have control over, land (Jha et al., 2024). The persistent impacts of patriarchal norms and practices, disjuncture between formal and customary laws, overall lack of enforcement and accountability, and unprecedented and gendered effects of climate change and environmental degradation have heightened women's and girls' water insecurity (Acevedo-Guerrero et al., 2024).

Historically, male engineers have often been prevalent in water professions, shaping powerful norms and expectations about the knowledge and expertise necessary for water governance and management (Zwarteveen, 2017). Available data from 64 utilities in 28 LMICs indicated that fewer than one in five water workers were women, and they were paid less than their male counterparts (World Bank, 2019). In 2019, the global average gender pay gap stood at about 20% (ILO, 2019), and women engineers and managers were under-represented at 23%. Women engineers were missing in a third of utilities and women managers were absent in 12% of utilities (World Bank, 2019). Women may be over-represented in administrative, low-value or low-skilled jobs, and often relegated to invisible, dangerous and stigmatized work in many sectors of the informal economy (Dickin and Caretta, 2022). In 2021/2022, women held less than half of WASH positions in government jobs in 79 of 109 responding countries and less than 10% in almost a quarter of responding countries (WHO, 2022). In a survey of 173 water organizations in the Global South, women's representation averaged 36% in junior, 38% in mid-level and 26% in leadership positions. This may presage a promising trend. However, the continuing slowdown in women advancing to senior positions reflects a stubborn gender gap that may preclude equitable water governance (Oluwasanya et al., 2024).

There are myriad underlying causes for this persistent under-representation across water professions and job categories such as entrenched discriminatory and patriarchal institutional cultures, and policies and practices that can detrimentally affect attracting, recruiting, retaining and promoting women (World Bank, 2019). These include gendered disciplinary preferences leading to relatively low numbers of women graduating in the science, technology, engineering and mathematics (STEM) field necessary for water professions (see Chapter 8).

Undervaluing women's labour, knowledge and expertise and gender stereotypes about women's suitability for certain kinds of work, including travel and fieldwork, underlie occupational segregation and gender pay gaps. A lack of family-friendly and care policies can compound women's disproportionate share of unpaid care and domestic responsibilities. In addition, exclusionary workplace environments and systemic sexual harassment may still prevail. For example, a state audit of the Metropolitan Water District of Southern California revealed patterns of rampant, unchecked racial and sexual harassment dating back years that continued to affect women and people of colour (Elmahrek, 2022).

Women may be precariously situated in water governance, and can be forced out of water institutions. Inhospitable workplaces, lack of equal pay, obstacles to attaining management and leadership positions, and over-riding conflicts between work demands, expectations and family and care responsibilities may contribute to this (UN Women, 2019; World Bank, 2019). Women and girls may be at risk of the omnipresent threat of gender-based violence and

sexual harassment and, in many contexts, the hard labour and physical wear and tear of fetching and carrying water such that *"a woman's body becomes part of the water-delivery infrastructure, doing the work of pipes"* (UN Women, 2014, p. 96).

For professional women and women in positions of authority, unpaid domestic and care responsibilities are often unacknowledged in policy and practice, but nonetheless constitute real challenges. Women may need to work harder than men to be recognized and have influence in water governance. They may also juggle overwhelming workloads in their public, professional and private lives given the exigencies of the 'second shift' (Hochschild and Machung, 2012).

9.2 Gender-diverse representation, participation and decision-making

Promoting the real and effective engagement of women and girls in water governance may be achieved by enacting legal reforms and implementing supportive policies, raising awareness and advocating against discrimination and exclusion, and building stakeholder capacity to knowledgeably influence decision-making and policymaking at local, national and global levels (IWRAW Asia Pacific, 2022; Shiva and Saha, 2025).

In some regions such as Latin America and the Caribbean, more than half of the national water policies analysed for a study directly addressed the gender gap in governance through various means. These included capacity development of water user organizations, support at the subnational level for incorporating a gender perspective into policies, programmes and projects, and working at the local, community and neighbourhood levels to increase the active participation of women and their organizations in decision-making in public and private bodies (Saravia Matus et al., 2022). For example, Peru's Directorate of Water User Organizations established a *Plan de Fortalecimiento de las Capacidades para la Igualdad de Oportunidades de Hombres y Mujeres en las Organizaciones de Usuarios del Agua* (Capacity Strengthening Plan for Equal Opportunities for Men and Women in Water User Organizations) (Dirección de Organización de Usuarios de Agua, 2019). It encompassed an assessment of women's participation in water user organization management and training, and capacity interventions designed to facilitate women's leadership (Saravia Matus et al., 2022).

Some water utilities are taking steps to incorporate gender concerns

In the Asia–Pacific region, Cambodia's five-year *Strategic Plan on Water Resources and Meteorology for 2024-2028* and water resources projects include gender-responsive IWRM with earmarked budgets and specific indicators (UNEP-DHI/GWP/UN Women, 2025). In North America, Canada applies the Gender-based Analysis Plus to advance gender mainstreaming in water policy, planning and management. It uses an intersectional lens by assessing how women, men and gender-diverse people may experience policies, programmes and initiatives, taking into account sex and gender, as well as race, ethnicity, religion, age and mental or physical disability (UNEP, 2024).

Promoting the entry of girls and women in STEM educational fields is a critical step towards increasing the number of women employed in professional, technical and management positions in the water sector (Kemenkes/UNICEF, 2022), including in policymaking, regulatory bodies and positions of authority. The value of mentoring and networking should not be underestimated. Adopting and implementing gender equality policies and practices on care, sexual harassment, equal pay and career advancement can help institutions and workplaces to recruit and retain women workers (World Bank, 2019).

Some water utilities are taking steps to incorporate gender concerns. For example, Uganda's public water utility, the National Water and Sewerage Corporation, has deliberately *"engendered*...

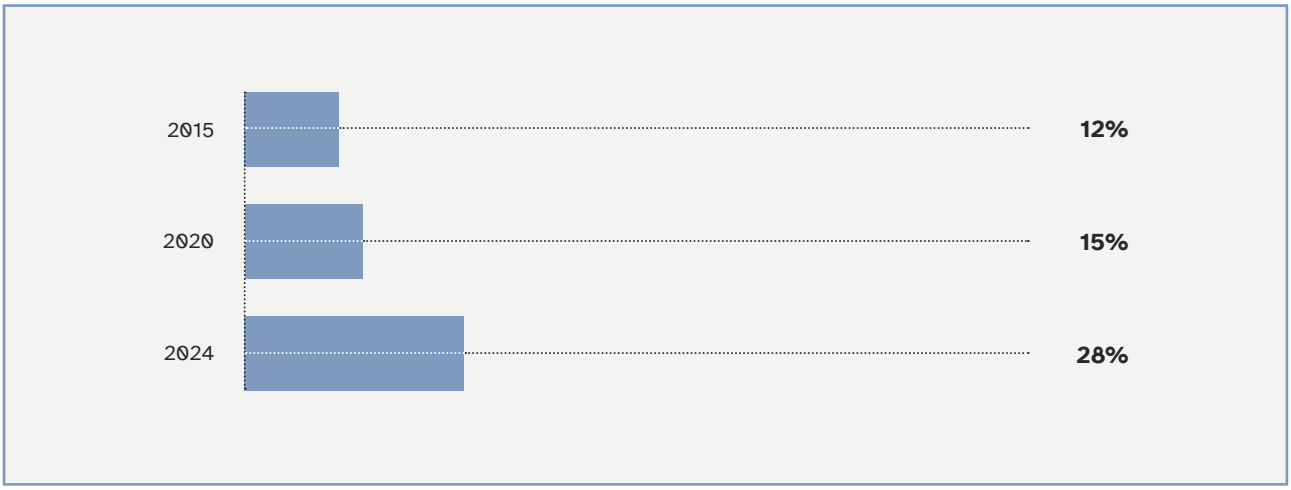
performance improvement programmes aimed at effective service delivery" (NWSC, 2022, p. 33). It has done this by applying gender balance indicators that track the gender composition of its staff and board. The National Water and Sewerage Corporation's *Corporate Plan 2024–2027* highlights gender mainstreaming as part of good governance, and indicates that the gender balance of the National Water and Sewerage Corporation board and staff hovers around 33% women staff (NWSC, 2024).

The application of gender quotas at local and national levels has been an effective means for governance of water and other resources, leading to improved sustainability and equity (ECOSOC, 2022; 2025). Women as heads of ministries of environment – as a proxy for water – reached 28% as of January 2024 (UN Women, 2024b) compared to 15% in 2020 and 12% in 2015 (IUCN, 2021; Figure 9.2). This may suggest the potential efficacy of quotas to bolster women's political participation across countries and enhance gender-responsive water governance. However, a "*critical mass*" of women – reaching at least a third or indeed gender parity – in different spheres and levels of governance is crucial to move beyond tokenistic or checkbox participation. This may be achieved by allowing for solidarity, mutual support, empowerment and strategic alliances across genders to effect change and remain accountable to gender constituencies and stakeholders (Agarwal, 2023).

In Morocco, the new draft water law specifies a level of women's representation in the *Conseil Supérieur de l'Eau et du Climat* (High Council for Water and Climate), the water basin councils and the provincial water committees. In addition, gender considerations are being integrated into annual budgets and the national water plan (UNEP-DHI/GWP/UN Women, 2025). At the local level, village councils in India with mandated representation of women are particularly apt to reflect women's concerns about drinking water in policy and investment decisions (Chattopadhyay and Duflo, 2004; Agarwal, 2023). In Vanuatu, the amended Water Resources Management Act requires that all local water committees have 40% women members; committees that do not comply will not be registered (UNEP-DHI/GWP/UN Women, 2025). The decisive participation of women in self-governed common watersheds in rural United Republic of Tanzania has led to greater fairness and equity in sharing water resources in times of abundance and scarcity, applying to the social status of women in comparison to men (Lecoutere et al., 2015).

However, evidence on the implementation and effects of gender quotas is mixed. Whereas gender quotas in coastal Bangladesh have increased women's formal participation in water management groups, decision-making remains dominated by men. This highlights the importance of strategies beyond tokenistic participation and the time needed to make substantive progress towards equitable water governance (Singaraju et al., 2025).

Figure 9.2 Proportion of women as heads of ministries of environment, 2015–2024



Source: Based on IUCN (2021) and UN Women (2024b).

In Nepal, women are being increasingly recognized in water policies through requirements such as 33% representation of women in WUAs and their inclusion in community management positions. For women to achieve meaningful participation in decision-making, gender quotas can be fostered through implementation plans, budget allocations, capacity development and systematic monitoring (Joshi and Ghimire, 2024). Evidence from East Africa has shown quotas at the village level may be disregarded or fail to contribute to strengthening women's decision-making power because discriminatory gender norms and hierarchies embedded in and reproduced by institutions can undermine women's and girls' rights and delegitimize their voice and agency (Eaton et al., 2021). In the United Republic of Tanzania, some promising interventions have emerged that directly target changing community gender norms using organized diffusion – knowledge-sharing through social networks. There have been positive results for women's participation in decision-making, if they involve women and men (including those in positions of authority and those not), deal with the fear of sanctions and take an intersectional lens. However, their impact on changing local water governance has not been fully assessed (Eaton et al., 2021).

The critical role of feminist and women's rights organizations in mobilizing for feminist water governance must be underscored. In Lao People's Democratic Republic, the Lao Women's Union has led a pioneering effort to increase women's participation in the design of water supply systems, their integration in local water management structures and ensuring their leadership in decision-making (UN-Habitat, 2025). In El Salvador, the *Colectiva Feminista para el Desarrollo Local* (Feminist Collective for Local Development) has supported efforts in Suchitoto municipality to advocate for and guarantee the human right to drinking water through gender-responsive and sustainable community water management (GAGGA, 2019). The Women and Rivers Network brings together women leaders from riverine and Indigenous communities, civil society, academia and policy spheres to address water, energy and climate change challenges in transboundary river basins, strengthening women river defenders around the globe (Women and Rivers Network, n.d.). See also Box 9.1 on gender aspects of transboundary water cooperation.

Box 9.1 Gender mainstreaming in transboundary water cooperation

A gender-responsive approach to water management is necessary at all levels of governance, including for transboundary rivers, lakes and aquifers. Historically, men have often dominated the institutions responsible for the negotiation and implementation of arrangements for transboundary water cooperation. But recognition of the need for greater gender balance in decision-making related to transboundary waters is starting to emerge, with joint institutions, such as river basin organizations, playing a key role. In South Africa, a number of river basin, river and watercourse commissions are promoting gender mainstreaming strategies, for example, the Limpopo Basin Commission's Gender Equality and Social Inclusion Strategy (2021–2025).

An analysis of national reports on Sustainable Development Goal Indicator 6.5.2 shows only 19% of river basins include *"the promotion of equality and inclusion, including gender equality"* (p. 16) as part of transboundary water arrangements, and only 15% of river basins include *"gender-related aspects of water management"* (p. 16) as tasks of their joint bodies. Moreover, the involvement of women's organizations in decision-making of these joint bodies is low. Women's organizations are afforded observer status in only 10% of river basins, and advisory roles in 8% of river basins. Thus, a major effort is needed to advance gender equality in transboundary water cooperation.

Source: UNECE/UNESCO/UN-Water (2024).

9.3 Conclusions

This chapter has discussed the challenges related to pursuing a feminist approach to water governance to overcome the historical patriarchal norms, systemic gender disparities and power imbalances that may be embedded in laws, policies, institutions and practices in the water domain. Such governance calls for the full, equal and meaningful participation and leadership of women and gender-diverse people in knowledge production and application and in decision-making and policymaking at all levels, as well as transparency and accountability in planning, financing, implementation and benefits. The chapter has also reviewed the challenges faced to achieve this, as well as promising approaches and practices that may show the way.

To challenge patriarchal norms and practices, rethink masculinized modes of knowledge and governance, and transform institutions towards more egalitarian and collaborative forms of decision-making is a whole-of-society and whole-of-government effort requiring unprecedented political will and social commitment. Nevertheless, some steps forwards can be determined.

Shiva and Saha (2025) have proposed a series of building blocks that could advance feminist water governance at multiple scales. These, in streamlined and adapted form, include the following.

Laws and policies:

- Human rights to water are translated into national laws and policies.
- Water policies, standards and guidelines at national and subnational levels address gender equality with relevant provisions, targets and budgets.
- Participation and leadership of women and gender-diverse people are enabled in decision-making and implementation of water-related laws, policies and programmes.

Institutions and workplaces:

- Water institutions, including ministries, government agencies and departments, utilities, water management and user groups, actively undertake gender mainstreaming to achieve gender balance and equal representation and participation of women and gender-diverse people in policy formulation, planning, decision-making, implementing and monitoring, with the support of measures such as gender quotas.
- Adoption and application of gender-responsive budgeting and other public finance measures for effective gender mainstreaming in water governance.
- Capacity development and training initiatives to encourage and facilitate participation of women and their organizations in water governance.
- Advocacy and raising awareness of the wider community about discriminatory norms and practices in the water domain and governance.
- Adoption and application of gender equality policies and practices on care (e.g. flexible work arrangements, child care options and parental leave), sexual harassment (e.g. prevention, protection and redress, codes of conduct and sanctions and safe field accommodation), improved working facilities (e.g. separate, safe and private sanitary facilities, changing rooms and lactation rooms), equal pay and career advancement.

Transparency and accountability:

- Operationalization of a dedicated water authority that regulates the above, including through gender audits of policies, institutions, budgets and projects.
- Gender data and statistics to support monitoring are publicly available.

Practical and systemic steps such as these, designed within the overall frame of feminist water governance, can put water use and management on the path to the realization of gender equality and human rights, equity and sustainability.

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Chapter 10

Financing and investment

UNESCO WWAP
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Financing, investment and efficient spending in water infrastructure, management and governance have significant socio-economic implications across several sustainable development objectives (Box 10.1). Financial decisions have a direct impact on what projects are funded, dictating whose water needs are prioritized. Financing provides the means through which governance frameworks (see Chapter 9) transform into tangible actions and programmes, provided the funds are used fairly, pragmatically and efficiently.

Financial decisions have a direct impact on what projects are funded, dictating whose water needs are prioritized

The intersection between financing and governance is an area where gender considerations have yet to be adequately considered. The manner in which resources are mobilized and allocated can either reinforce inequities or actively dismantle them. Gender equality and effective water management have been understood to be mutually beneficial for decades (Taukobong et al., 2016; Okesanya et al., 2024).

Creative financing strategies are needed to transform this in-principle understanding into practice. Additionally, explicit efforts are required to shift the narrative that relegates women and girls as vulnerable water users to a platform that considers them as key investors, innovators and efficiency multipliers in water management. This shift is critical for demonstrating that active gender-sensitive investment in the water sector can generate higher returns for investors.

Many international projects and initiatives (including Sustainable Development Goal (SDG) 6) remain mostly gender-blind, and overlook the specific realities, needs, knowledge and contributions of women and girls (Taing and Oluwasanya, 2022). For example, reviews about Sub-Saharan Africa and urban water adaptation contexts highlight that interventions often ignore gender dynamics, risk of violence and inequities in technical skill access (Tandon et al., 2022; Tallman et al., 2023; Mutanda and Nhamo, 2024). This may result in missed opportunities to enhance the impact and cost-effectiveness of water initiatives. The costs associated with rectifying these missed opportunities to improve service will likely grow as infrastructure ages, environmental risks increase and the global population rises. The international community may therefore need to re-evaluate traditional funding methods to become more gender-responsive. Such approaches can redress historical underinvestments in gendered water priorities while creating more sustainable, inclusive and resilient water management.

Box 10.1 Gender dividend of water and sanitation

Evidence shows that investing in water and sanitation generates substantial economic and gender-equality gains. In Benin, Kenya, Nigeria, Sierra Leone and Uganda, the sanitation economy could unlock nearly US$19 billion by 2030, creating jobs, supporting circular waste-to-value industries, and expanding opportunities for women-led enterprises (Economist Impact, 2023; SHF, 2023). At the same time, inadequate water access continues to impose significant economic losses as the cost of water collection is equivalent to up to 10% of minimum monthly earnings per water carrier (Schmidt et al., 2024), with women and girls spending billions of hours each year collecting water instead of engaging in education or paid work (Water.org, n.d.).

10.1 Water's trillion-dollar investment gap

In 2022, global investments in water infrastructure and management were reported to be about US$300 billion annually, with an estimated gap of US$700 billion per year needed to achieve water security by 2030 (OECD, 2022). If nothing is done to increase investment rates, the financing needs for water-related infrastructure investment have been estimated to rise to US$6.7 trillion by 2030 and further increase to US$ 22.6 trillion by 2050 (Khemka et al., 2023; Voegele et al., 2024). This global shortfall is concentrated in regions with the lowest levels of safely managed water and sanitation services, most notably Sub-Saharan Africa and South Asia (UNICEF/WHO, 2023).

While imperative, mobilizing funding is difficult. Traditional funding streams such as tariffs, taxes and transfers are generally insufficient. Public budget cuts can increase unpaid water-related labour. Water utilities themselves can also suffer financial losses due to inefficiencies, typically accounting for roughly 15% of their total operating costs. A combination of challenges in water sector financing – including fragmentation of funding streams, limited creditworthiness of utilities and weak enabling environments – has cast uncertainty on whether the sector can realize and meet its targets within a reasonable time-frame (Joseph et al., 2024).

As of 2023, the gap for financing the SDGs in their entirety stood at US$4 trillion per year, with SDG 6 making up a significant portion (United Nations, 2024). Closing the water financing gap can have positive cascading impacts for the sustainable development agenda. For example, in 2014, it was estimated that every US$1 invested in the water sector would generate a return of about US$4.3 through reduced health care costs (SDG 3), reduced pollution (SDGs 11 and 13) and increased school attendance (SDG 5) (WHO/UN-Water, 2014).

10.1.1 Funding landscape for water resources

Water-related funding (covering water supply and sanitation, irrigation, water transport and hydropower) is sourced primarily from public funds, with government budgetary allocations and investments through state-owned enterprises constitute most of the total spending (Joseph et al., 2024). Public spending usually takes the form of transfers from general taxation by national, regional and local governments to cover capital expenditure, subsidize tariffs or cover operating deficits of water operations (Goksu et al., 2017). This is complemented by official development assistance (ODA) whose commitments for water supply and sanitation fell by 9% from 2022 to 2023. At the same time, however, there has been progress in mainstreaming gender objectives within water-sector ODA. The share of water and sanitation ODA marked as having a significant gender equality component has increased steadily, to 35% in 2023 (WHO/UNICEF, 2025).

Public budget cuts can increase unpaid water-related labour

The share of private investments remains marginal, reflecting the significant challenges faced in investing in the sector such as high upfront costs, long payback periods and the low creditworthiness of recipients (Rodriguez et al., 2012). Considering the growing fiscal pressure and decreased availability of ODA, increasing attention has been invested in mobilizing private capital to bridge the financing gap. Common blended finance instruments have been concessional credit lines, credit enhancement through guarantee issuance and grant provision, direct investment in companies and special purpose vehicles, shares in collective investment vehicles and simple co-financing (Machete and Marques, 2021). In this context, the role of water public–private partnerships (PPPs) has also grown, with 9% of water supply and sanitation infrastructure being financed through PPPs in 2017 (Joseph et al., 2024).

Additional financing sources have emerged. There has been increased interest in use-of-proceeds bonds such as green, blue, climate and environmental impact bonds, and the establishment of dedicated financing institutions and funds to mobilize investments for water such as the clean water and drinking state revolving funds in the United States of America and NWB Bank in the Kingdom of the Netherlands (OECD, 2022).

For small-scale water operations such as irrigation schemes and community-level wastewater treatment, microfinance and retail banking can also play a significant role (Khemka et al., 2023).

10.2 The water–gender nexus in finance

Beyond the trillion-dollar investment gap outlined above, how finance is allocated and accessed is also critical. Gender dynamics, social inequities and governance challenges can shape the effectiveness and inclusivity of water investments. Financing mechanisms that consider these dynamics can help reduce existing disparities, particularly for women and marginalized groups who may disproportionately bear the costs of inadequate water services.

10.2.1 Global recognition of financing shortfalls

The international community has understood the importance of women in addressing water insecurity for decades (United Nations, 1990; Fong et al., 1996; Rathgeber, 1996). Furthermore, numerous declarations from governments have expressed support for integrating gender-based considerations into drinking water, sanitation and hygiene (WASH) planning, evaluation and financing. However, there have been shortcomings reported in implementation. For example, a 2015 report noted that only 16% of national water resources plans mentioned women as specific key stakeholders or primary participants in climate adaptation (Fletcher and Schonewille, 2015). The rhetorical support for gender participation has not consistently translated into meaningful resources allocation and financial or institutional commitments.

Women and girls may bear a disproportionate share of water-related tasks in regions with high funding gaps. Underinvestment in water infrastructure can increase gender inequalities. Even in places where the funding gap is low (e.g. Latin America), the proportion of women and girls experiencing WASH burden may remain high, pointing to a need for more gender-targeted investments (UNICEF/WHO, 2023; Joseph et al., 2024).

In addition to funding shortfalls, governance challenges – particularly corruption – can constrain the effectiveness of gendered financing in the water sector. Corruption diverts resources away from intended beneficiaries and weakens service delivery, which can compound many forms of inequality. Corruption can manifest in multiple ways, although exact data are limited. At the household level, corruption can take the form of bribes for repairs, falsified meter readings or illicit payments for new connections (Breen and Gillanders, 2024). At the institutional level, funds earmarked for WASH services have sometimes been embezzled or misallocated, contributing to persistent service gaps (Ohwo, 2019).

Governance failures may reinforce gendered burdens, as women and girls are often responsible for compensating when formal systems fall short (see Chapter 9). Mobilizing new resources and safeguarding investments through participatory monitoring, gender-responsive budgeting and transparent procurement systems can help to address these issues. Without such safeguards, financial commitments risk being undermined, and the potential for transformative outcomes may remain unrealized.

10.2.2 Gender-responsive financing

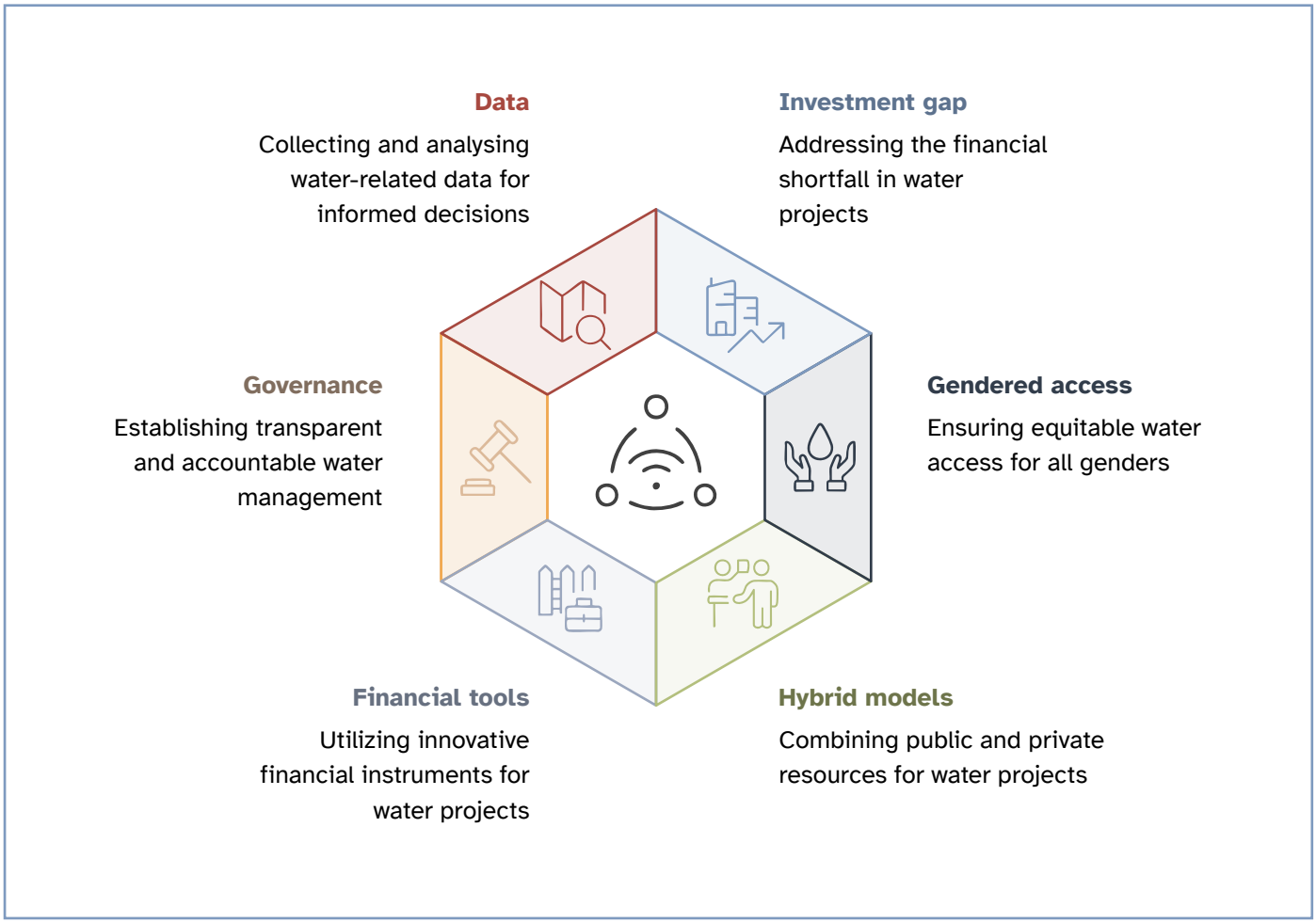
The shortfalls in water financing and their cascading impacts have led to a call for gender-responsive financing (or gender lens financing). In the water sector, this financing is oriented towards investments that integrate an understanding of the gender-differentiated water needs and roles

in water management (Achampong, 2023). This is anchored in the wider concept of inclusive water financing, the foundations of which are outlined in Figure 10.1. Unlike approaches that assume uniform impacts, gender-responsive financing integrates an understanding of how water insecurity and service delivery affect people differently.

For example, women and girls often bear disproportionate burdens of water collection in rural contexts, while female-headed households in urban areas may be disproportionally vulnerable to affordability challenges when prices rise. Financing schemes can be developed at any level of the financing regime, from local government grants to PPPs. This financing can: (a) build on meaningful and inclusive stakeholder engagement; (b) lead to equal benefit-sharing among genders (supported by sex-disaggregated data), specifically addressing obstacles experienced by women and girls; and (c) support women's leadership and agency in the water value chain. Section 10.4 provides examples of gender-responsive financing.

While gender-responsive financing is imperative to increase equality, it is also a financially prudent investment strategy that can unlock significant economic returns. Introducing a gender-responsive financing strategy is a way to increase returns on investment (ROI). For example, research has shown that using participatory approaches in community development significantly increased project effectiveness. A review of 121 rural water supply projects across 49 countries found that projects emphasizing community participation were more effective than those designed and implemented with minimal local input (Narayan, 1995). Although this analysis was not focused specifically on gender, women were often the most active participants in these initiatives due to their central role in household water collection and management. Subsequent studies have since confirmed that when women's perspectives are explicitly included in planning and decision-making, projects tend to be more sustainable and responsive to community needs (Gross et al., 2001).

Figure 10.1 Foundational components that make up gender-inclusive water financing



Source: Authors.

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Equitable financing can contribute to enhanced revenue streams. One report found that 90% of investors who used a gender-responsive strategy met or exceeded financial expectations in 2024, with 51% also communicating strong impact results and improved financial performance. According to that study, the increases occurred because gendered projects invite more diversity of thought and innovation, leading to better performances overall (Hand et al., 2024).

Studies have since confirmed that when women's perspectives are explicitly included in planning and decision-making, projects tend to be more sustainable and responsive to community needs

Gender-responsive financing can also reduce investment risks. Projects that overlook gender-differentiated needs may face community resistance, underutilization of infrastructure or outright failure, leading to sunk costs. In contrast, inclusive financing frameworks can mitigate these risks by fostering community ownership and accountability, lowering the likelihood of costly project redesigns or premature infrastructure replacement (Mangai and De Vries, 2018). The above provides a strong case for scaling up gender-responsive financing in the water sector. It is a prudent financial strategy that may be more likely to return a higher ROI than gender-agnostic approaches.

10.3 Looking beyond financial return

Looking beyond immediate financial gains, financing agencies and donors may choose to take a longer-term view to set investing priorities. Although international financial institutions (IFIs), non-governmental organizations, private actors and governments have different priorities, they generally seek significant return on financial investments. Traditional definitions of 'bankability' used by these actors have mostly limited funding to projects with clear financial ROI (Ellis and Pillay, 2017). However, bankability as a concept is evolving to include broader social and economic impacts than direct profit or financial return (McCoy and Schwartz, 2023).

For example, valuing the time and economic losses women and girls bear in domestic water-related activities is essential. Investing in projects that reduce these burdens can have a direct economic effect on communities such as building social capital. Within this evolving understanding, bottom-up projects that combine social benefits with water resources efficiency could be prioritized as the new ROI analysis appropriately adjusts for longer-term socio-economic impacts rather than economic impacts only. Effective implementation would likely require gender-specific co-producers, ensuring investments are inclusive and sustainable, and delivering improved long-term outcomes.

10.4 Integrating gender into water spending

Investments in gender equality and women's empowerment are critical accelerators of sustainable water governance and service delivery. Emerging financing modalities and strategies increasingly recognize the value of gender-responsive approaches to strengthen efficiency, accountability and long-term returns. The sections below illustrate approaches and strategies that move beyond traditional cost–benefit metrics to integrate financial and social value.

10.4.1 Public sector/blended finance

Gender-responsive budgeting is a transformative approach that integrates gender analysis into the allocation and execution of public budgets. For example, Morocco adopted a gender-responsive budgeting finance law in 2014, institutionalizing the publication of annual gender budget statements for over 27 departments, including those responsible for water and infrastructure (UN Women, 2014; Government of Morocco, 2025). This initiative established a gender quota of at least 25% women in regional water committees, which has established gender mainstreaming into the country's water finances (ISDB, 2019). These efforts demonstrate that incorporating women's perspectives can strengthen resources allocation and decision-making. Box 10.2 provides another example, in India. Remaining challenges include the limited availability of sex-disaggregated data, weak political will and enforcement gaps, which can render gender-responsive budgeting to be only 'tokenistic'.

Blended finance – which strategically anchors public, philanthropic and private capital around shared goals – can be a powerful driver of investment scale and gender equity projects, but only if gender benchmarks are integral within the structure of the finance scheme. For example, between 2019 and 2024, gender-responsive transactions represented only 28% of climate blended finance deals (Convergence, 2025). Initiatives such as the United States Agency for International Development's Water, Sanitation and Hygiene Finance programme have had success in these schemes, for example, by improving creditworthiness in Nepal and expanding funding access in South Africa (Segura Consulting LLC, n.d.).

Yet, most blended finance has prioritized low-risk, financially 'bankable' projects, often excluding vulnerable populations (Attridge and Engen, 2019). Additionally, private capital only represents 38% of blended finance (Convergence, 2025), whereas 70% of blended climate finance flows to international corporations, thus marginalizing local actors (Mazzucato, 2025). Without specific gender benchmarks and meaningful gender inclusion, commercial priorities can override equality goals, thus limiting effectiveness.

Box 10.2 Women owned and operated drinking water, sanitation and hygiene businesses in India

In rural India, the Maharashtra State Rural Livelihoods Mission has piloted a community water purification plant model in regions with water contamination or where piped connections are absent or unreliable, through a blended financing approach (Anand, 2022). This initiative, which aligns with the Government of India's Jal Jeevan Mission policy guidelines, involves financial contributions from self-help groups of women, women entrepreneurs, financial institutions and Water.org.

The model explicitly requires that plants be owned and operated by women, thereby establishing women-led social enterprises that deliver affordable, safe drinking water in underserved communities. Since 2021, 39 plants have been installed across Maharashtra, employing 156 women, averaging four women per plant. Women constitute the entire workforce and serve 100–150 households, providing reliable, treated water at low cost. The loan repayment rate is 100%, and the plants typically achieve profitability within two years (Water.org, 2025).

Gender-responsive financing has also become increasingly visible within the ODA landscape. The Green Climate Fund provides a leading example of gender-responsive financing. It requires a gender assessment and project-level gender action plan for each investment. This ensures projects are encoding integrated gender analysis into project design, setting sex-disaggregated targets and promoting equal participation and leadership into the core of the project (GCF, 2017). A project with marketed success is in Viet Nam, where this approach has directly benefited over 62,000 individuals by securing water access for small agriculture landowners and supporting women's leadership in water user and pond management groups (Taishi, 2023).

Results-based financing can be another effective tool for achieving water security and gender empowerment. It ties distribution of monetary resources to verified results, such as service reliability or equal access, with the goals of improving efficiency and accountability (Castalia Strategic Advisors, 2015). For example, the World Bank's Global Partnership for Results-Based Approaches has supported multiple water and sanitation projects (GPRBA, n.d.a; n.d.b; n.d.c). Embedding gender-specific targets within results-based financing frameworks can enhance efficiency and equity, addressing disparities in access, agency and benefits while promoting sustainable water interventions. However, results-based financing requires robust monitoring and timely data, which can be challenging in resource-limited contexts.

Integrating gender perspectives in water PPPs can ensure women's needs and contributions are recognized throughout the project cycle, from design and procurement through to delivery and monitoring. The World Bank emphasizes that applying a gender lens helps to identify obstacles to women's participation, incorporate gender-responsive targets in bidding documents, and ensure public and private partners are accountable for equal benefits. Such an approach can strengthen social outcomes and enhance the long-term sustainability of water PPPs (World Bank, 2024).

10.4.2 Small-scale investments and retail banking

Gendered microfinance and microleasing can provide small-scale, flexible financial instruments tailored to the unique needs and repayment capacities of users. Gendered microfinance prioritizes women as clients, recognizing their historical exclusion from formal finance institutions in developing countries while also recognizing their critical impact on water development. Typical projects funded through this mechanism include building household latrines, and installing water purification devices and small-scale irrigation kits.

Water.org's WaterCredit Initiative was one of the forerunners to institute a microloan programme in developing countries (World Bank, 2024). Since its inception in 2004 through to 2021, it has helped over 30 million people (87% of them women) in 13 countries (Damon and White, 2021). In India, self-help groups – primarily composed of women – have mobilized significant capital for sanitation improvements. In Odisha, the Mission Shakti initiative has enabled women's groups to operate and maintain sanitation systems, and the iJal programme has supported women to manage small water enterprises that provide affordable drinking water to rural households (Dang et al., 2022; Safe Water Network, 2024). Similar experiences are emerging in other parts of India, where women's self-help groups are taking active roles in water resources management and irrigation planning (IWMI, 2024).

These cases demonstrate that community-based financial systems led by women can strengthen service delivery, health outcomes and accountability, while reducing dependence on large, centralized infrastructure. However, evidence from Bangladesh shows that access to finance alone does not ensure empowerment, as patriarchal norms may still limit women's control over resources (Shohel et al., 2021). Based on the available evidence, programmes that integrate financing with safeguards for women's decision-making power, capacity development and participation in governance appear more likely to sustain lasting positive outcomes.

In several cases, water enterprises led by women, such as water kiosks in Kenya (Siemens Stiftung, 2024), can outperform male-dominated enterprises in cost recovery, service quality and credit management (Iskenderian, 2022). Despite the strong ROI, these enterprises often face systemic impediments such as low capital and limited market access, underscoring the need for supportive policies and investment by international and private entities. Having financial institutions begin to prioritize these enterprises may help relieve the disparate impacts historically felt by women and girls.

Investments that prioritize enterprises serving women, and that intentionally challenge discriminatory norms, have the potential to deliver gender-transformative impacts. In India, Piramal Sarvajal's women-operated water automated machines and franchise models have expanded access to affordable, quality-assured drinking water in low-income communities while enabling women to become local franchisees and system operators (Piramal Sarvajal, n.d.). In Kenya, Sanivation's container-based sanitation model employs women in the operation of decentralized sanitation services, providing stable livelihoods while improving access to safe sanitation in underserved urban settlements. These models illustrate how mission-aligned capital can scale gender-responsive and socially inclusive solutions in the water and sanitation sector.

10.5 Conclusions

The financing gap for the water sector remains vast and requires mobilizing nearly US$7 trillion by 2030 (Khemka et al., 2023; Voegele et al., 2024). Effective gender-responsive finance in the water sector may be a pathway to increased financial returns and efficiency, more inclusive service delivery, greater financial sustainability and accelerated progress towards universal water access. Without meaningful integration of gender considerations into water finance, achieving the SDGs, especially for water and sanitation, will remain out of reach.

Gender-sensitive budgeting needs to be strongly encouraged, supported by clear accountability mechanisms and full transparency. Experience shows that voluntary or ad hoc approaches consistently fall short, often resulting in tokenistic allocations and weak, unsustained investments. This has resulted in women either not being consulted or having only a marginal say in what happens. Gender considerations can become sidelined in favour of large-scale infrastructure. Yet evidence shows the inclusion of women can improve financial returns by strengthening decision-making, improving bottom-up acceptance and increasing project efficiency. Policies and pilot programmes are needed and may require gender-based budgeting in water-related investments to ensure priorities are integrated from the inception of the project.

Developing assessments that are beyond typical financial return calculations and instead take a longer and broader socio-economic valuation may help financial strategies to account for the essential yet often undervalued roles of women and girls in water systems. Such assessments could include elements (e.g. unpaid water-related domestic work, which carries significant economic value) to be recognized in financing strategies. The assessment of long-term cascading effects and values is challenging but crucial. Meaningful participation in the financing process can strengthen trust, transparency and community ownership, which can improve the sustainability of investments. Specific and tailored modalities and strategies are needed to address structural impediments such as limited land ownership, banking access and credit histories, without perpetuating cycles of indebtedness. Gender-responsive financing should avoid reinforcing dependency on external aid and instead enable equal, long-term participation in water security. National indebtedness can have cascading effects on all individuals and communities.

Women and girls can be key investors, innovators and efficiency multipliers in water management. Investing in women within the water sector has repeatedly led to significantly better returns than traditional financing strategies. The march towards sustainable development through water can be aided by changing the international narrative so that all people are considered more than just end users.

Scaling gender-responsive water financing requires involvement from IFIs and the private sector. Mobilizing international capital through sources such as IFIs, PPPs and private actors will likely become even more critical in the future. Institutions such as the

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World Bank or multinational corporations are likely to play pivotal roles in coming decades in shaping capital flows and international financing standards. However, safeguards are necessary to prevent loans and investments from deepening already high indebtedness and dependence on developed countries. The current system of indebtedness already limits fiscal autonomy in many developing countries (Mohammed, 2025).

Limiting corruption, improving transparency and rectifying historical indebtedness could increase the effectiveness of water financing. Gender-responsive financing frameworks can be improved by integrating strong accountability and anti-corruption measures. Enhancing transparency in financial flows could protect resources while improving outcomes for gender equality in water financing. Additionally, gender-responsive financing must not deepen the debt burdens of developing countries and create new financial dependencies undermining progress towards gender equality in the water sector.

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Chapter 11

Conclusions

UNESCO WWAP
Richard Connor and Laura Verónica Imburgia

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The interlinkages between water and gender equality run deep, transecting nearly all aspects of sustainable development. Inequalities in access to water and sanitation services and to freshwater resources contribute directly to gender inequalities across multiple areas.

The United Nations resolutions on the human rights to safe drinking water and sanitation (Chapters 1 and 2) call for these rights to be provided to all – equally and without discrimination. However, despite some progress, universal access to safe drinking water and sanitation in households, schools, workplaces and health care facilities remains inadequate for millions of people. These shortcomings disproportionately affect women and girls living in poverty.

Similarly, gender-based inequalities in access to freshwater resources for productive uses can disadvantage certain groups of people. For example, because access to water resources (i.e. 'water rights') is often linked to land rights, gender-discriminatory formal or customary land tenure rules have been shown to obstruct women's access to irrigation water rights.

Despite often being responsible for managing water in and around their homes, from collection through to various domestic uses, many women remain underrepresented (and, in certain cases, excluded) in most aspects of water-related institutional decision-making and governance, including the allocation of water to various uses and the design and control of infrastructure. This undermines their freedom to express their concerns, set priorities and contribute to improving water management within their households, communities, fields, industries and beyond.

As challenging as the current state of affairs may seem, this report has highlighted some responses that, individually and collectively, can address the various gender imbalances in water for the greater benefit of all.

The initial fundamental steps are to recognize the breadth and repercussions of gender inequalities related to water and seek to address the causes, rather than the symptoms. For example, while increasing gender parity in water-related governing bodies certainly represents a legitimate response, addressing the underlying socio-economic reasons for this disparity is essential. Otherwise, initiatives such as those ensuring a minimal number of women participating may add up to nothing more than tokenistic representation.

Beyond the human rights to water and sanitation, the fulfilment of other basic human rights – including the rights to work, education, housing and an adequate standard of living, not to mention those related to freedom from discrimination and a safe and healthy environment – can also have a positive impact on efforts to achieve gender equality in water. From a legal perspective, any laws or policies that discriminate against women, either directly or inadvertently, need to be revised or eliminated. These include legal frameworks related to land tenure (Chapter 3) and housing rights (Chapter 2), as well as policies linked to education (Chapter 8) and employment (Chapter 4). It is also essential to consider the cultural and socio-economic contexts in which such laws and policies are embedded (Chapter 9), recognizing how and when these may present underlying obstacles to progress.

Successful examples of progress are emerging worldwide, from local community-level programmes and activities through to national policies and legislation that address gender-based discrimination and foster meaningful inclusivity. These range in scope from specific efforts to eliminate gender-based violence related to securing water for domestic uses (Chapter 2) to gender mainstreaming in transboundary water cooperation and other regional and global initiatives (Chapter 9). These examples of gender-responsive and gender-transformative approaches collectively send a clear message that, with the appropriate understanding, effective legislation and bold action, substantive progress can be made.

With strong linkages to water and gender equality, climate change and hydrometeorological disasters represent another area of concern, as they can reinforce existing systemic gender inequalities (Chapter 5). Global policy frameworks like the Paris Agreement and the Sendai Framework for Disaster Risk Reduction 2015–2030 have integrated gender perspectives, which can inspire and guide processes that apply specifically to the water domain. In addition, approaches that account for and address gender gaps in water and ecosystem management can contribute to reducing gender-based inequalities, while at the same time, enhancing climate change adaptation and improving ecosystem health and resilience (Chapter 6).

Data and information are essential to inform (and in some cases reform) policy, decision-making, and legal frameworks (Chapter 8). Indeed, throughout this report, the need for – and value of – sex-disaggregated data (water-related and beyond) that clearly reflect gender differences and inequalities have been demonstrated.

For example, metrics concerning women's participation in water governance and decision-making (Chapter 9) or their level of employment in water utilities (Chapter 4) illustrate the gender imbalances in the sector. Encouraging girls to study science, technology, engineering and mathematics subjects and promoting equal opportunities for women to pursue technical water-related careers can correct this situation and, importantly, yield positive results (Chapter 8). Women – including those from Indigenous and local communities – possess expertise and traditional knowledge, as well as unique experiences, ideas and opinions, that are vital for shaping water resources policies, programmes, financing schemes and international dialogue (Chapter 7).

Achieving all of the above requires political will, and, in some cases, significant shifts in cultural norms and misconceptions, in addition to appropriate financing. While the water domain has been notoriously underfunded – especially in lower-income countries – this report has shown it is not so much a question of additional expenses, but rather a restructuring of existing funding that prevents gender equality. Gender-responsive financing promotes inclusive stakeholder engagement, leading to equal benefit-sharing, specifically addressing obstacles experienced by women and girls, and can support women's leadership and agency in the water value chain (Chapter 10).

Meeting the objective of water for all through gender equality will require a concerted effort among all stakeholders – from local practitioners through to decision-makers at the highest levels.

Local and national governments are responsible for formulating and applying laws and policies that prioritize gender-responsive approaches and actions (Chapter 9). These include the removal of gender-based barriers of all kinds, such as land tenure (Chapter 3), support for female entrepreneurship in the water services sector (Chapter 4), and the promotion of suitable education and training programmes that meet the needs of women and men (Chapter 8). Appropriate policies are needed to address inequalities in terms of unpaid domestic work (Chapters 2 and 8), including caregiving and supplying water to households, and to promote gender-inclusive education, accounting for the specific needs of – and the removal of barriers to – girls and young women. The adoption and application of gender-responsive budgeting and other public finance measures are also essential for effective gender mainstreaming in water management and governance (Chapter 10).

Coda

Gender equality matters in access to water resources and fulfilment of the human rights to water and sanitation.

While women and girls are still largely responsible for water-related tasks at home, they are disproportionally affected by lack of access to safe drinking water, sanitation and hygiene services in schools, workplaces, health care facilities and households.

Access to water resources is generally linked to land tenure, directly affecting the availability of water for productive uses such as farming, leaving some women and men at social and economic disadvantages.

Lack of sex-disaggregated water data remains a fundamental blind spot, obscuring inequalities in access, labour and decision-making. Addressing this gap is important for effective and accountable water policies and investments.

Women are often under-represented in employment and decision-making related to water, undermining their capacity to contribute to improving water management practices. However, many women from different socio-economic, educational and professional backgrounds have been contributing to water management for decades. This report builds on their work, highlighting examples that can be useful for closing gender gaps in the water domain.

Addressing gender-based inequalities related to water is key to poverty alleviation, fulfilling the human rights to water and sanitation, and accomplishment of most Sustainable Development Goals.

When it comes to water, gender equality leads to enhanced opportunities for all.

Abbreviations and acronyms

ANA	Agência Nacional de Águas e Saneamento Básico [National Water and Sanitation Agency]
ANEAS	Asociación Nacional de Entidades de Agua y Saneamiento [National Association of Water and Sanitation Entities]
AQUASTAT	Global Information System on Water and Agriculture
ARESEP	Autoridad Reguladora de Servicios Públicos [Public Services Regulatory Authority]
ASEAN	Association of Southeast Asian Nations
ASM	Artisanal and small-scale mining
CFS	Committee on World Food Security
COP	Conference of the Parties
DRM	Disaster risk management
DRR	Disaster risk reduction
EWS	Early warning system(s)
FAO	Food and Agriculture Organization of the United Nations
GBV	Gender-based violence
Hg	Mercury
IFI	International financial institution
IWRM	Integrated water resources management
LDC	Least developed country
LMIC	Low- and middle-income country
NAP	National adaptation plan
NDMA	National Disaster Management Authority
NGO	Non-governmental organization
NMHS	National Meteorological and Hydrological Service
ODA	Official development assistance
PPP	Public–private partnership
ROI	Returns on investment
SDG	Sustainable Development Goal
SHARP	Self-Evaluation and Holistic Assessment of Climate Resilience of Farmers and Pastoralists
SIDS	Small island developing state(s)
STEM	Science, technology, engineering and mathematics
TVET	Technical and vocational education and training
UNESCO	United Nations Educational, Scientific and Cultural Organization
UN-Habitat	United Nations Human Settlements Programme
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	Drinking water, sanitation and hygiene
WHO	World Health Organization
WRM	Water resources management
WUA	Water user association
WWAP	World Water Assessment Programme

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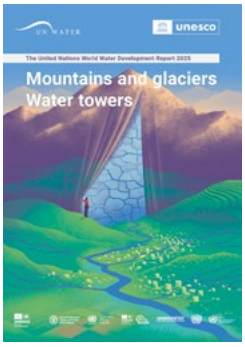

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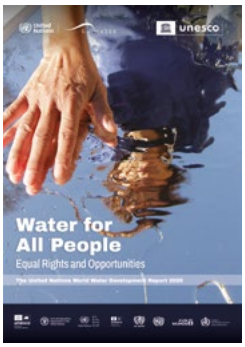

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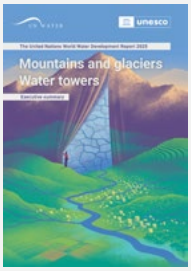

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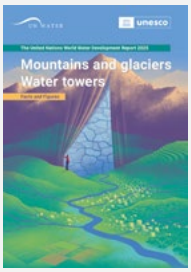

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World Water Assessment Programme

UN-WATER REPORTS AND OTHER RELEVANT PUBLICATIONS

UN-Water coordinates the efforts of United Nations entities and international organizations working on water and sanitation issues. By doing so, UN-Water seeks to increase the effectiveness of the support provided to Member States in their efforts towards achieving international agreements on water and sanitation. UN-Water publications draw on the experience and expertise of UN-Water's Members and Partners.

United Nations World Water Development Report

The United Nations World Water Development Report is UN-Water's flagship report on water and sanitation issues, focusing on a different theme each year. The report is published by the United Nations Educational, Scientific and Cultural Organization (UNESCO) on behalf of UN-Water, and its production is coordinated by the UNESCO World Water Assessment Programme. The report gives insight on the main trends concerning the state, use and management of fresh water and sanitation, based on work done by the Members and Partners of UN-Water. Launched in conjunction with World Water Day, the report provides decision-makers with knowledge and tools to formulate and implement sustainable water policies. It also offers best practices and in-depth analyses to stimulate ideas and actions for better stewardship in the water sector and beyond.

United Nations System-wide Strategy for Water and Sanitation

After the United Nations 2023 Water Conference, United Nations General Assembly resolution A/RES/77/334 requested "the Secretary-General to present a United Nations system-wide water and sanitation strategy in consultation with Member States before the end of the seventy-eighth session of the General Assembly". The goal of the Strategy is to enhance United Nations system-wide coordination and delivery of water-related priorities resulting in more strategic, effective, coherent and efficient support to Member States in their efforts to accelerate progress on national plans and priorities, internationally agreed water-related goals and targets, and transformative solutions to current and future water-related challenges. The Strategy was launched in July 2024 at the High-level Political Forum on Sustainable Development in New York.

Collaborative Implementation Plan

The Collaborative Implementation Plan outlines how the United Nations system will jointly implement the United Nations System-wide Strategy for Water and Sanitation. Covering the period 2025–2028, it identifies shared priorities and actions to strengthen coordination, align agency workplans and deliver more coherent and effective support to Member States.

UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS)

The GLAAS report is produced by the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) on behalf of UN-Water. It provides a global update on the policy frameworks, institutional arrangements, human resources base, and international and national finance streams in support of water and sanitation. It is a substantive input to the activities of Sanitation and Water for All, as well as the progress reporting on Sustainable Development Goal (SDG) 6.

Progress reports of the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP)

The JMP is affiliated with UN-Water and is responsible for global monitoring of progress towards SDG 6 targets for universal access to safe and affordable drinking-water and adequate and equitable sanitation and hygiene services. Every two years, the JMP releases updated estimates and progress reports for drinking-water, sanitation and hygiene in households (as part of the progress reporting on SDG 6), schools and health care facilities.

United Nations SDG 6 Synthesis Report on Water and Sanitation

The SDG 6 Synthesis Report on Water and Sanitation is a publication of the United Nations prepared by UN-Water that is strategically timed as an input to the periodic in-depth review of SDG 6 during the United Nations High-level Political Forum on Sustainable Development. By identifying gaps, trends and priority actions, the reports help governments, United Nations entities and partners understand what is needed to accelerate progress and ensure the availability and sustainable management of water and sanitation for all.

UN-Water Country Acceleration Case Studies

To speed up the achievement of SDG 6 targets as part of the SDG 6 Global Acceleration Framework, UN-Water releases SDG 6 Country Acceleration Case Studies to explore countries' pathways to achieving faster progress on SDG 6 at the national level. The case studies document replicable good practices for achieving the SDG 6 targets as well as look at how progress can be accelerated across SDG 6 targets in a country. Since 2022, studies have been released from Bhutan, Brazil, Cambodia, Costa Rica, Czechia, Ghana, Jordan, Pakistan, Rwanda, Saudi Arabia and Senegal.

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WORLD WATER DAY AND THE UNITED NATIONS WORLD WATER DEVELOPMENT REPORT

The United Nations designates specific days, weeks, years and decades as occasions to mark particular events or topics in order to promote, through awareness and action, the objectives of the Organization.

International observances are occasions to educate the general public on issues of concern, to mobilize political will and resources to address global problems, and to celebrate and reinforce achievements of humanity.

The majority of observances have been established by resolutions of the United Nations General Assembly. World Water Day (22 March) dates back to the 1992 United Nations Conference on Environment and Development where an international observance for water was recommended.

The United Nations General Assembly responded by designating 22 March 1993 as the first World Water Day. It has been held annually since then and is one of the most popular international days together with International Women's Day (8 March), the International Day of Peace (21 September) and Human Rights Day (10 December).

Every year, UN-Water — the UN's coordination mechanism on water and sanitation — sets a theme for World Water Day corresponding to a current or future water-related challenge. This theme also inspires the theme of the United Nations World Water Development Report that is presented on World Water Day. The publication is UN-Water's flagship report and provides decision-makers with tools to formulate and implement sustainable water policies. The report also gives insight on main trends including the state, use and management of fresh water and sanitation, based on work by the Members and Partners in UN-Water.

The report is published by UNESCO, on behalf of UN-Water, and its production is coordinated by the UNESCO World Water Assessment Programme.

Gender-based inequalities related to the access, use, management and governance of water resources – including water supply and sanitation services – have hindered progress towards fulfilling the human right to water and most Sustainable Development Goals.

The ***Water for All People: Equal Rights and Opportunities*** report provides a comprehensive, evidence-based summary of the linkages between, and progress towards, water and gender equality. It describes how normative and policy frameworks translate into problem analysis, programme design principles and strategic action implementation in the water domain, pinpointing solutions for the benefit of all.

The **United Nations World Water Development Report** *is UN-Water's flagship report on water and sanitation issues, focusing on a different theme each year. The report is published by UNESCO, on behalf of UN-Water, and its production is coordinated by the* **UNESCO World Water Assessment Programme**. *The report gives insight on main trends concerning the state, use and management of fresh water and sanitation, based on work done by the Members and Partners of UN-Water. Launched in conjunction with World Water Day, the report provides decision-makers with knowledge and tools to formulate and implement sustainable water policies. It also offers best practices and in-depth analyses to stimulate ideas and actions for better stewardship in the water sector and beyond.*

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